



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
21.09.2011 Bulletin 2011/38

(51) Int Cl.:
A47D 13/02 (2006.01)

(21) Application number: **11153143.0**

(22) Date of filing: **03.02.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(71) Applicant: **Lucky Industry Co. Ltd.**
Ibi-gun, Gifu 503-2423 (JP)

(72) Inventor: **Higuchi, Junichi**
Ibi-gun, Gifu 503-2423 (JP)

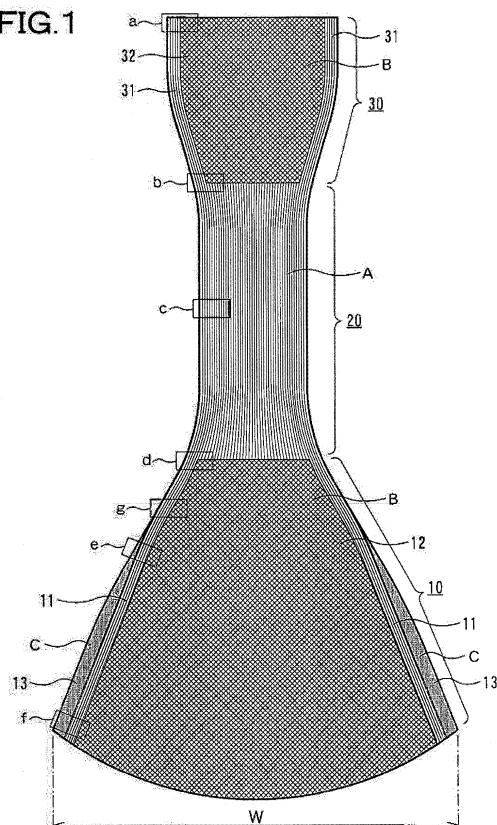
(74) Representative: **TBK**
Bavariaring 4-6
80336 München (DE)

(30) Priority: **19.03.2010 JP 2010063764**

(54) **Baby sling**

(57) A baby sling includes an infant holding part 10 that holds an infant in which the infant holding part 10 has a maximum width W that corresponds to a central part in a longitudinal direction of the baby sling and a gradually decrease in width between both sides in the longitudinal direction of the baby sling, wherein both sides in the longitudinal direction of the baby sling consists of outer parts 11 that are formed of a knitted fabric "A" which has a low elasticity in a width direction which is at right angle to the longitudinal direction of the baby sling and a center side in the longitudinal direction of the baby sling consists of an inner part 12 that is formed of a knitted fabric "B" which has a high elasticity in the width direction which is at right angle to the longitudinal direction of the baby sling. Thereby, the infant's body weight is applied to the inner part 12 that is formed of the high elastic knitted fabric "B" while both sides in the longitudinal direction of the baby sling are guarded with the outer part 11 that is formed of the low elastic knitted fabric "A". Therefore, the baby sling can stably hold the infant. Accordingly, a safe and secure baby sling can be provided.

FIG. 1



Description

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

[0001] This invention relates to a baby sling that is used when carrying an infant as a supportive device to hold the infant.

DESCRIPTION OF THE RELATED ART

[0002] A conventional art of the kind mentioned above is described in Japanese Patent Laid Open No. 2007-75238. The Japanese Patent Laid Open No. 2007-75238 discloses a baby sling 1 that has an annularly formed belt body 10 in which the belt body 10 is formed of a knitted fabric that a central part 14 and side edge parts 15 are integrally knitted together using an elastic yarn for the central part 14 in a width direction and a non-elastic yarn for the side edge part 15. In addition, in the width direction of the belt body 10, the central part 14 is composed of a net tissue that is knitted into a relatively coarse net and the side edge part 15 is composed of a dense tissue that is knitted into a relatively fine net. The belt body 10 has also net tissues 13b and 13d that are knitted into relatively coarse nets and dense tissues 13a, 13c and 13d that are knitted into relatively fine nets in a longitudinal direction thereof.

[0003] The number for each part is a code that has been used to describe the embodiment of the Japanese Patent Laid Open No. 2007-75238.

[0004] In the Japanese Patent Laid Open No. 2007-75238 thus formed, the side edge part 15 of the belt body 10 has a restricted elongation by the non-elastic yarn while the central part 14 is elongated in the width and longitudinal directions by expansion of the knitted fabric and elongation of the elastic yarn itself. Thereby, the central part 14 may change into a more three-dimensional appearance and fitness may be improved. In addition, the side edge part 15 has a further restricted elongation and the central part 14 has net tissues 13b and 13d that have change in shape in addition to the elongation of the elastic yarn itself. Thereby, a significant difference may be shown in stretchability between the central part 14 and the side edge part 15. The central part 14 may change into a much more three-dimensional appearance and fitness may be enhanced. Moreover, the belt body 10 may have an improved strength by knitting the side edge part 15 into dense tissues 13a, 13c and 13e. Besides, an infant holding part 13d, a shoulder pad part 13b or the like which requires elongation in a width direction is knitted into a net tissue to secure the fitness while other parts may be knitted into dense tissues 13a, 13c and 13e to enhance the strength. Furthermore, net tissues 13b and 13d are strong and easily knitted separately from dense tissues 13a, 13c and 13e. Additionally, a diameter of the annular body is adjustable to fit a user's

body.

[0005] In the Japanese Patent Laid Open No. 2007-75238, when a baby sling is in an unfolded state, two connecting rings 11 are attached to one end of 13a of a net-like belt body 10 and a retaining member 12 which is made of a hard rubber sheet is sewn on an opposite end 13e thereof. The baby sling is formed in an annular shape by inserting the opposite end 13e of the belt body 10 into two rings 11 to restrain therebetween. In a longitudinal direction of an annular body, the belt body 10 has part between one end 13a to which the ring 11 is attached and the opposite end 13e on which the retaining member 12 is sewn that corresponds to a shoulder pad part 13b to be placed on a user's shoulder, a back pad part 13c to be placed on the user's back and an infant holding part 13d to hold an infant. A diameter of the annular body is adjustable to fit the user's body without regulation by adjusting a position where it is restrained with the ring 11.

[0006] In the baby sling described in the Japanese Patent Laid Open No. 2007-75238, two connecting rings 11 are attached to one end 13a of the net-like belt body 10 and the retaining member 12 which is made of a hard rubber sheet is sewn on the opposite end 13e of the belt body 10, wherein the baby sling is formed in an annular shape by inserting the opposite end 13e of the belt body 10 into the two rings 11 to restrain therebetween. However, even if the baby sling is inserted into two rings to restrain therebetween, slippage may occur during use. Thereby, the user does not feel safe when he or she puts an infant on the baby sling just with his or her hands on the infant. Actually, the user carries the infant with his or her hands around the infant's buttocks during use.

[0007] It is an object of the present invention to provide a baby sling that can stably receive an infant at an infant holding part without change in a whole length of an annular body.

BRIEF SUMMARY OF THE INVENTION

[0008] According to a first aspect of the invention, there is provided a baby sling comprising an infant holding part, a belt part and a shoulder pad part. The infant holding part has a maximum width that corresponds to a central part in a longitudinal direction of an annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body in which both sides in the longitudinal direction of the annular body are formed of a knitted fabric that has a low elasticity in the longitudinal direction of the annular body and a center side in the longitudinal direction of the annular body is formed of a knitted fabric that has a high elasticity in a width direction which is at right angle to at least the longitudinal direction of the annular body. The belt part is formed to be connected to both ends in a longitudinal direction of the infant holding part. The shoulder pad part is formed of both a low elastic knitted fabric that is connected to both ends of the belt part and a knitted fabric,

which is formed inside the shoulder pad part, having a high elasticity in the width direction which is at right angle to at least the longitudinal direction of the annular body. The infant holding part, the belt part and the shoulder pad part mentioned above are integrally knitted together to form an annular shape.

[0009] The infant holding part has the maximum width that corresponds to a width which is at right angle to a length of the central part in the longitudinal direction of the annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body are formed of a low elastic knitted fabric that is knitted with a rib stitch or the like. The rib stitch originally provides a high stretchability in a specific direction. However, another advantage is utilized in the practice of the present invention. That is, the rib stitch provides a low stretchability in a direction which is at right angle to the direction of the high stretchability. Accordingly, high or low stretchability in the practice of the present invention depends on a way to use and it only needs to use in a specified direction.

[0010] The knitted fabric that has a high elasticity in the width direction which is at right angle to at least the longitudinal direction of the annular body is formed of a knitted fabric that is knitted with a plain stitch such as a mesh stitch or the like. The mesh stitch provides elasticity only in a specific direction and makes the knitted fabric readily stretch.

[0011] High or low elasticity as used herein is not expressed in modulus of elasticity. A low elastic knitted fabric means a knitted fabric that has a relatively low stretchability such as rib knitting or the like. A high elastic knitted fabric, even including a plain-knitted fabric, means a knitted fabric that is elastic with a mesh stitch, a pattern stitch or the like, wherein a rib-knitted fabric that has a high elasticity should be embraced therein as well. In addition, the phrase including "at least" as used herein means embracing a knitted fabric such as purl knitting or the like that is elastic in two directions which are at right angles to each other.

[0012] The infant holding part has the maximum width that corresponds to the central part in the longitudinal direction of the annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body are formed of a low elastic knitted fabric and the central part in the longitudinal direction of the annular body is formed of a high elastic knitted fabric.

[0013] The belt part, which is formed to be connected to both ends in the longitudinal direction of the infant holding part, is formed of a knitted fabric that has a low elasticity in the longitudinal direction of the annular body. A rib stitch is used in the present embodiment. Thereby, the belt part has a high elasticity in a direction which is at right angle to the longitudinal direction of the annular body.

[0014] The shoulder pad part is formed of both a low elastic knitted fabric that is connected to both ends of the belt part and a knitted fabric, which is formed inside the shoulder pad part, having a high elasticity in the width direction which is at right angle to at least the longitudinal direction of the annular body.

[0015] Moreover, part consisting of the infant holding part, the belt part and the shoulder pad part is integrally knitted together to form an annular shape in an order of the infant holding part, the belt part, the shoulder pad part, the belt part and the infant holding part.

[0016] According to a second aspect of the invention, there is provided a baby sling comprising an infant holding part, a belt part and a shoulder pad part. The infant holding part has a maximum width that corresponds to a central part in a longitudinal direction of an annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body are formed of a knitted fabric that has a low elasticity in the longitudinal direction of the annular body and a center side in the longitudinal direction of the annular body is formed of a knitted fabric that has a high elasticity in a width direction which is at right angle to at least the longitudinal direction of the annular body. The belt part is formed of a low elastic knitted fabric that is connected to both ends in a longitudinal direction of the infant holding part. The shoulder pad part is formed of a low elastic knitted fabric that is connected to both ends of the belt part. The infant holding part, the belt part and the shoulder pad part mentioned above are integrally knitted together to form an annular shape.

[0017] The infant holding part has the maximum width that corresponds to a width which is at right angle to a length of the central part in the longitudinal direction of the annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body and both sides in the longitudinal direction of the annular body are formed of a low elastic knitted fabric that is knitted with a rib stitch or the like. The rib stitch originally provides a high stretchability in a specific direction. However, another advantage is utilized in the practice of the present invention. That is, the rib stitch provides a low stretchability in a direction which is at right angle to the direction of the high stretchability.

[0018] The knitted fabric that has a high elasticity in the width direction which is at right angle to at least the longitudinal direction of the annular body is formed of a knitted fabric that is knitted with a plain stitch such as a mesh stitch or the like. The mesh stitch provides elasticity only in a specific direction and makes the knitted fabric readily stretch.

[0019] High or low elasticity as used herein is not expressed in modulus of elasticity. A low elastic knitted fabric means a knitted fabric that has a relatively low stretchability such as rib knitting or the like. A high elastic knitted fabric, even including a plain-knitted fabric, means a knitted fabric that is elastic with a mesh stitch, a pattern stitch

or the like. A rib-knitted fabric that has a high elasticity should be also embraced therein. In addition, the phrase including "at least" as used herein means embracing a knitted fabric such as purl knitting or the like that is elastic in two directions which are at right angles to each other.

[0020] The infant holding part has the maximum width that corresponds to the central part in the longitudinal direction of the annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body are formed of a low elastic knitted fabric and the central part in the longitudinal direction of the annular body is formed of a high elastic knitted fabric.

[0021] In addition, part consisting of the belt part and the shoulder pad part is formed to be connected to both ends in the longitudinal direction of the infant holding part and formed of a knitted fabric that has a low elasticity in the longitudinal direction of the annular body.

[0022] Moreover, part consisting of the infant holding part, the belt part and the shoulder pad part is formed so that the infant holding part, the belt part and the shoulder pad part are integrally knitted together to form an annular shape.

[0023] According to a third aspect of the invention, there is provided a baby sling in which the infant holding part has a center that is curved to form a convex shape when the baby sling is folded in two so as to be at right angles to each other in the longitudinal direction of the annular body. Thereby, it readily weighs down with the infant's weight and a center of gravity is created in the infant holding part or an adjacent part thereof. A curve and elasticity thereof should be provided at a depth where the center of gravity is positioned so as to maintain a stable balance.

[0024] According to a fourth aspect of the invention, there is provided a baby sling in which the shoulder pad part has a center that is curved outward to form a convex shape when the baby sling is folded in two so as to be at right angles to each other in the longitudinal direction of the annular body. Thereby, when an inner side of the convex-shaped portion is placed on a shoulder, the shoulder pad part should be arranged in width so that the infant's body weight can be a combination of vectors going from an upper side and a lateral side of the shoulder.

[0025] According to a fifth aspect of the invention, there is provided a baby sling including the infant holding part and two positions each at the belt part and the shoulder pad part integrally knitted together to form an annular shape in which the baby sling should be knitted with a single spun yarn or the like. "To be knitted with a single spun yarn or the like" as used herein may include forming a finished garment that is knitted with a single yarn by utilizing garment knitting technique on a seamless flat knitting machine ("WHOLEGARMENT" is a registered trademark of Shima Seki Mft., Ltd.). In addition, the yarn is not restricted to a spun yarn. A filament yarn, a mono-

filament yarn, a bulky yarn, a hollow yarn, a covered yarn, a core yarn, a composite yarn, a flat yarn, a modified cross-section yarn, a split yarn, a Japanese lacquered yarn or the like may be used instead. As a raw material of the yarn, a yarn that is made from a chemical material, a metal or a plant, a twin that is made from any combination thereof or the like may be used. A yarn, which is especially high in mechanical strength, may give elasticity to a knitted fabric thereof. Thereby, a shred-resistant yarn that is relatively high in mechanical strength such as a tensile strength or the like is preferably used as the raw material of the yarn.

[0026] According to a sixth aspect of the invention, there is provided a baby sling including the infant holding part that both sides in the longitudinal direction of the annular body, which are formed of a low elastic knitted fabric, are knitted with a rib stitch and the center side in the longitudinal direction of the annular body, which is formed of a high elastic knitted fabric, is knitted with a plain stitch. The rib stitch and the plain stitch as used herein are not restricted to a specific knitting. A mesh or a pattern that could be simple or complex may be splashed instead.

[0027] According to a seventh aspect of the invention, there is provided a baby sling including the infant holding part in which both sides in the longitudinal direction of the annular body are formed of double sheets of a low elastic knitted fabric.

[0028] The double sheets of a low elastic knitted fabric as used herein may be applied to either one of an inner and outer surfaces of the both sides in the longitudinal direction of the annular body or may be applied to have an annular shape.

[0029] According to an eight aspect of the invention, there is provided a baby sling including the infant holding part in which both sides in the longitudinal direction of the annular body, which are formed of a low elastic knitted fabric, are knitted with a rib stitch and the center side in the longitudinal direction of the annular body, which is formed of a high elastic knitted fabric, is knitted with a plain stitch such as a mesh stitch or a pattern stitch or is knitted with a stretch plain stitch, a bare plain stitch or a purl stitch when necessary.

[0030] The both sides of the infant holding part in the longitudinal direction of the annular body, which are formed of a low elastic knitted fabric, as used herein are knitted with a rib stitch. Any knitted fabric that has a low elasticity may be used instead.

[0031] According to the first aspect of the invention, the baby sling includes an infant holding part that holds an infant. The infant holding part has a maximum width that corresponds to a central part in a longitudinal direction of the baby sling and a gradually decrease in width between both sides in the longitudinal direction of the baby sling, wherein both sides in the longitudinal direction of the baby sling are formed of a knitted fabric that has a low elasticity (less expansion and contraction) in a width direction which is at right angle to the longitudinal direc-

tion of the baby sling and a center side in the longitudinal direction of the baby sling is formed of a knitted fabric that has a high elasticity in the width direction which is at right angle to at least the longitudinal direction of the baby sling or a knitted fabric that has a high elasticity in both the longitudinal direction of the baby sling and the width direction which is at right angle to the longitudinal direction of the baby sling. Thereby, the infant's body weight is applied to the high elastic knitted fabric and both sides in the longitudinal direction of the baby sling are guarded with the low elastic knitted fabric. Thus, the baby sling can stably hold the infant. In addition, a shoulder pad part is formed to be connected to both ends of a belt part which is formed to be connected to both ends in the longitudinal direction of the infant holding part. Especially when the shoulder pad part is formed of both a low elastic knitted fabric that is connected to both ends of the belt part and a knitted fabric, which is formed inside the shoulder pad part, having a high elasticity in the width direction which is at right angle to at least the longitudinal direction of the baby sling, the infant's body weight can be dispersed without concentration on one part of a shoulder. Thereby, fatigue on the shoulder of a person who holds the infant can be reduced. Moreover, the infant holding part, the belt part and the shoulder pad part are integrally knitted together to form an annular shape. Thereby, there is no possibility that some parts are torn or elongated with a seam partially open. Accordingly, a safe and secure baby sling can be provided.

[0032] Thus, there is provided a baby sling that can stably hold an infant at the infant holding part without change in a whole length of the annular body.

[0033] According to the second aspect of the invention, the baby sling includes an infant holding part that holds an infant. The infant holding part has a maximum width that corresponds to a central part in a longitudinal direction of the baby sling and a gradually decrease in width between both sides in the longitudinal direction of the baby sling, wherein both sides in the longitudinal direction of the baby sling are formed of a knitted fabric that has a low elasticity in a width direction which is at right angle to the longitudinal direction of the baby sling and a center side in the longitudinal direction of the baby sling is formed of a knitted fabric that has a high elasticity in the width direction which is at right angle to at least the longitudinal direction of the baby sling or a knitted fabric that has a high elasticity in the longitudinal direction of the baby sling and the width direction which is at right angle to the longitudinal direction of the baby sling. Thereby, the infant's body weight is applied to the high elastic knitted fabric and both sides in the longitudinal direction of the baby sling are guarded with the low elastic knitted fabric. Thus, the baby sling can stably hold the infant. In addition, a shoulder pad part is formed to be connected to both ends of a belt part which is formed to be connected to both ends in the longitudinal direction of the infant holding part. Thereby, the infant's body weight can be dispersed without concentration on one part of a shoulder

and fatigue on the shoulder of a person who holds the infant can be reduced. Moreover, the infant holding part, the belt part and the shoulder pad part are integrally knitted together to form an annular shape. Thereby, there is no possibility that some parts are torn or elongated with a seam partially open. Accordingly, a safe and secure baby sling can be provided.

[0034] Thus, there is provided a baby sling that can stably hold an infant at the infant holding part without change in a whole length of the annular body.

[0035] According to the third aspect of the invention, the baby sling includes the infant holding part that has a center which is curved outward to form a convex shape when the baby sling is folded in two so as to be at right angles to each other in the longitudinal direction of the annular body. The baby sling is therefore advantageous in that it readily weighs down with the infant's weight and a center of gravity is created in the infant holding part or an adjacent part thereof to maintain a stable balance, thereby providing an easy-to-use supportive device to hold an infant, in addition to the effects of the first or the second aspect of the invention.

[0036] According to the fourth aspect of the invention, the baby sling includes the shoulder pad part that has a center which is curved to form a convex shape when the baby sling is folded in two so as to be at right angles to each other in the longitudinal direction of the annular body. The baby sling is therefore advantageous in that when the convex-shaped portion is placed on a shoulder, the infant's body weight can be a composition of vectors going from an upper side and a lateral side of the shoulder, thereby reducing a burden on the user's shoulder, in addition to the effects of the first or the third aspect of the invention.

[0037] According to the fifth aspect of the invention, the baby sling which is formed so that the infant holding part, the belt part and the shoulder pad part are integrally knitted together to form an annular shape using a seamless flat knitting machine is knitted with a single yarn. The baby sling is therefore advantageous in that there is no possibility that the baby sling has a lack of functions with a seam partially open, in addition to one of the effects of the first to the fourth aspects of the invention.

[0038] According to the sixth aspect of the invention, the baby sling includes the infant holding part that both sides in the longitudinal direction of the annular body, which are formed of a low elastic knitted fabric, are knitted with a rib stitch and the center side in the longitudinal direction of the annular body, which is formed of a high elastic knitted fabric, is knitted with a plain stitch. The baby sling is therefore advantageous in that it is knitted with the rib stitch and the plain stitch that are generally highly reliable knitting, thereby providing a product which is stable in quality control, in addition to one of the effects of the first to the fifth aspects of the invention.

[0039] According to the seventh aspect of the invention, the baby sling includes the infant holding part, wherein both sides in the longitudinal direction of the an-

nular body are formed of double sheets of a low elastic fabric. The baby sling is therefore advantageous in that elasticity in the longitudinal direction of the annular body is minimized as much as possible and the infant's buttocks can stably sink down in the baby sling, in addition to one of the effects of the first to the sixth aspect of the invention.

[0040] According to the eighth aspect of the invention, the baby sling includes the infant holding part, wherein both sides of the infant holding part in the longitudinal direction of the annular body, which are formed of a low elastic knitted fabric, are knitted with a rib stitch and the center side in the longitudinal direction of the annular body, which is formed of a knitted fabric that has a high elasticity in a direction which is at right angle to the longitudinal direction of the annular body, is knitted with either one of a plain stitch such as a mesh stitch or a pattern stitch, a stretch plain stitch, a bare plain stitch or a purl stitch. The baby sling is therefore advantageous in that only elasticity in the longitudinal direction of the infant holding part can be reduced and the center side in the longitudinal direction of the annular body may be formed of a high elastic knitted fabric, thereby improving reliability of the baby sling, in addition to one of the effects of the first to the seventh aspect of the invention.

[0041] Especially if the infant holding part and/or the shoulder pad part is formed of a breathable mesh, the baby sling can be used without having a damp feeling.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0042]

Fig. 1 is a front view showing a front face of an annularly-shaped baby sling, which is folded in two, according to a first embodiment of the invention.

Fig. 2 is a symbol diagram showing control in a knitting process of the baby sling according to the first embodiment of the invention which is shown in Fig. 1. Fig. 3 is a knitting pattern diagram showing an enlarged knitting state of part "a" of the baby sling according to the first embodiment of the invention which is shown in Fig. 1.

Fig. 4 is a knitting pattern diagram showing an enlarged knitting state of part "b" of the baby sling according to the first embodiment of the invention which is shown in Fig. 1.

Fig. 5 is a knitting pattern diagram showing an enlarged knitting state of part "c" of the baby sling according to the first embodiment of the invention which is shown in Fig. 1.

Fig. 6 is a knitting pattern diagram showing an enlarged knitting state of part "d" of the baby sling according to the first embodiment of the invention which is shown in Fig. 1.

Fig. 7 is a knitting pattern diagram showing an enlarged knitting state of part "e" of the baby sling ac-

cording to the first embodiment of the invention which is shown in Fig. 1.

Fig. 8 is a knitting pattern diagram showing an enlarged knitting state of part "f" of the baby sling according to the first embodiment of the invention which is shown in Fig. 1.

Fig. 9 is a knitting mesh pattern diagram showing an enlarged knitting state of part "g" of the baby sling according to the first embodiment of the invention which is shown in Fig. 1.

Fig. 10 is a perspective view of a general shape of the baby sling according to the first embodiment of the invention.

Figs. 11a and 11b are reference views showing an in-use state of the baby sling according to the first embodiment of the invention.

Fig. 12 is a front view showing a front face of an annularly-shaped baby sling, which is folded in two, according to a second embodiment of the invention.

Fig. 13 is a front view showing a front face of an annularly-shaped baby sling, which is folded in two, according to a third embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0043] A preferred embodiment of the present invention is described hereunder based on accompanying drawings. In the embodiment, same code and same sign in the drawings mean the same or an equivalent function part. Therefore, overlapped detail explanation will be omitted here.

FIRST EMBODIMENT

[0044] In Fig. 1, a baby sling according to an embodiment of the present invention includes an infant holding part 10, a belt part 20 and a shoulder pad part 30 integrally knitted together to form an annular shape.

[0045] The infant holding part 10 has a maximum width that corresponds to a central part in a longitudinal direction of an annular body and a gradually decrease in width between both sides in the longitudinal direction of an annular body toward both ends in the longitudinal direction of the annular body. In addition, both sides in the longitudinal direction of the annular body are formed of a knitted fabric "A" that has a low elasticity in the longitudinal direction of the annular body and includes an outer part 11 which is knitted with a rib stitch, also known as Japanese "gomuami". The rib stitch that is applied to the outer part 11 is referred to as the Japanese "gomuami" or a fraise stitch also. There is no distinction between opposite surfaces of a knitted fabric thereof and the opposite surfaces are same in appearance. The rib stitch provides a relatively high stretchability in a lateral direction and a relatively low stretchability in a longitudinal direction compared with a plain stitch. A property of the rib stitch that provides a relatively low stretchability in a longitudinal direction may be applied to the longitudinal

direction of the annular body. A spun yarn, a filament yarn, a monofilament yarn, a bulky yarn, a hollow yarn, a covered yarn, a core yarn, a composite yarn, a flat yarn, a modified cross-section yarn, a split yarn, a Japanese lacquer yarn or the like may be used as a yarn used herein.

[0046] The plain stitch is not unusable in the low elastic knitted fabric "A" that is used in each longitudinal direction of both sides in the longitudinal direction of the annular body according to the present embodiment.

[0047] A center side in the longitudinal direction of the annular body, which is formed of a knitted fabric "B" that has a high elasticity in a width direction which is at right angle to the longitudinal direction of the annular body or in a width of the infant holding part 10, corresponds to an inner part 12 that is knitted with a plain stitch such as a mesh stitch or a pattern stitch. The plain stitch that is applied to the inner part 12 provides the most basic knitted tissue that a front surface of the knitted tissue seems to have a band in a longitudinal direction and a reverse surface thereof seems to have a slightly coarse appearance. However, in the practice of the present invention, the infant holding part 10 and/or the shoulder pad part 30 is knitted with a mesh stitch having breathability. Thereby, the baby sling can be used without a damp feeling. In addition, the plain stitch that is applied to the inner part 12 provides elasticity to a specific direction by applying a mesh stitch, a pattern stitch or the like.

[0048] The inner part 12, which is formed of a high elastic knitted fabric "B" that is knitted with a plain stitch such as a mesh stitch or a pattern stitch, may be knitted with a purl stitch instead. The purl stitch provides a high elasticity in both the longitudinal direction of the annular body and the width direction which is at right angle to the longitudinal direction of the annular body.

[0049] The belt part 20 is formed to be connected to both ends in the longitudinal direction of the infant holding part 10 and formed of a knitted fabric "A", which is knitted with a rib stitch or the like, having a low elasticity in the longitudinal direction of the annular body.

[0050] The shoulder pad part 30 has a gradually decrease in width between both sides in the longitudinal direction of the annular body toward both ends in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body are formed of a knitted fabric "A", which corresponds to outer parts 31 which are knitted with a rib stitch, having a low elasticity in the longitudinal direction of the annular body. In addition, the shoulder pad part 30 is formed to be connected to both ends of the belt part 20 and formed of a low elastic knitted fabric that has a gradually increase in width between both sides in the longitudinal direction of the annular body. An inner part 32 is formed of a knitted fabric "B", which is knitted with a plain stitch such as a mesh stitch or a pattern stitch, having a high elasticity in the width direction which is at right angle to the longitudinal direction of the annular body or in the width direction of the infant holding part 10. Especially if the knitted fabric

"B" that has a high elasticity in the width direction of the infant holding part 10 is knitted with a plain stitch that is also a mesh stitch having an air hole, the breathability may prevent the infant from having a damp feeling.

[0051] The baby sling according to the present embodiment is a finished product that is knitted with a single spun yarn using a WHOLEGARMENT knitting machine as a seamless flat knitting machine (WHOLEGARMENT is a registered trademark of Shima Seki Mfg., Ltd.) so that the infant holding part 10, the belt part 20 and the shoulder pad part 30 are integrally knitted together to form an annular shape. MACH2X and MACH2S that are WHOLEGARMENT flat knitting machines manufactured by Shima Seki Mfg., Ltd. are used as the WHOLEGARMENT knitting machine as used herein.

[0052] Figs. 2 to 8 and Fig. 9 are indicated as a knitting pattern diagram showing a relationship between a needle and a knitting yarn that show a specific knitting process.

[0053] A symbol diagram in Fig. 2 showing control of a knitting process is described as follows. A first knitting process shows a plain stitch on a front side. A second knitting process shows a plain stitch on a reverse side. A third knitting process shows an adjustment of a position of a needle to a left side by one pitch after the process of the plain stitch on the front side. A fourth knitting process shows an adjustment of the position of the needle to a right side by one pitch after the process of the plain stitch on the front side. A fifth knitting process shows an adjustment of a position of a needle to a left side by one pitch after the process of the plain stitch on the reverse side. A sixth knitting process shows an adjustment of the position of the needle to a right side by one pitch after the process of the plain stitch on the reverse side.

[0054] Fig. 3 is a knitting pattern diagram of part "a" in Fig. 1 in which a low elastic knitted fabric "A" that corresponds to an outer part 31 is knitted with a rib stitch and a high elastic knitted fabric "B" that corresponds to an inner part 32 is knitted with a plain stitch. This knitting pattern is formed to be connected to an opposite side of the knitting pattern diagram shown in Fig. 3.

[0055] Fig. 4 is a knitting pattern diagram of part "b" in Fig. 1 in which a low elastic knitted fabric "A" that corresponds to an outer part 31 is knitted with a rib stitch and a high elastic knitted fabric "B" that corresponds to an inner part 32 is knitted with a plain stitch. The high elastic knitted fabric "B" that corresponds to the inner part 32 is knitted with the plain stitch so as to be connected to the rib stitch that is applied to the belt part 20 shown in Fig. 1.

[0056] Fig. 5 is a knitting pattern diagram of part "c" shown in Fig. 1 in which a low elastic knitted fabric "A" that corresponds to an outer part 31 is knitted with a rib stitch.

[0057] Fig. 6 is a knitting pattern diagram of part "d" in Fig. 1 in which a low elastic knitted fabric "A" that corresponds to an outer part 11 is knitted with a rib stitch and a high elastic knitted fabric "B" that corresponds to an inner part 12 is knitted with a plain stitch. The high elastic knitted fabric "B" that corresponds to the inner part 12 is

knitted with the plain stitch so as to be connected to the rib stitch that is applied to the belt part 20 shown in Fig. 1.

[0058] Fig. 7 is a knitting pattern diagram of part "e" in Fig. 1 in which a low elastic knitted fabric "A" that corresponds to an outer part 11 is knitted with a rib stitch and a high elastic knitted fabric "B" that corresponds to an inner part 12 is knitted with a plain stitch. In addition, an additional part 13, which is located lateral to the outer part 11, is formed of a low elastic knitted fabric "C" that is knitted with the same rib stitch as the outer part 11 so as to be connected to the outer part 11. Each side of the additional part 13, which is located lateral to the outer part 11, is knitted in a different way so as to be readily involved. Thereby, it makes harder for the outer part 11 to partially bite into infant's legs which are hanging out of the baby sling.

[0059] Fig. 8 is a knitting pattern diagram of part "g" that is shown in Fig. 1 in which a low elastic knitted fabric "A" that corresponds to an outer part 11 and an additional part 13 is knitted with a rib stitch and a high elastic knitted fabric "B" that corresponds to an inner part 12 is knitted with a plain stitch. The high elastic knitted fabric "B" that corresponds to the inner part 12 is formed of the plain stitch so as to be connected to the rib stitch that is applied to the belt part 20 shown in Fig. 1. In addition, the additional part 13, which is located lateral to the outer part 11, is formed of a low elastic knitted fabric "C" that is knitted with the same rib stitch as the outer part 11 so as to be connected to the outer part 11.

[0060] Fig. 9 is a knitting pattern net diagram (photograph) of part "g" in Fig. 1, illustrating a specific example. In Fig. 9, a low elastic knitted fabric "A" that corresponds to an outer part 11 is knitted with a rib stitch and a high elastic knitted fabric "B" that corresponds to an inner part 12 is knitted with a plain stitch. The high elastic knitted fabric "B" that corresponds to the inner part 12 is formed of the plain stitch so as to be connected to the rib stitch that is applied to the belt part 20 shown in Fig. 1.

[0061] The baby sling according to the present embodiment comprises an infant holding part 10, a belt part 20 and a shoulder pad part 30 integrally knitted together to form an annular shape. As shown in a lower part of Fig. 1, the infant holding part 10 has a maximum width W that corresponds to a central part in a longitudinal direction of an annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body consist of outer parts 11 that are formed of a knitted fabric "A" which has a low elasticity in the longitudinal direction of the annular body and a center side in the longitudinal direction of the annular body consists of an inner part 12 that is formed of a knitted fabric "B" which has a high elasticity in a width direction which is at right angle to at least the longitudinal direction of the annular body. The belt part 20 is formed of a low elastic knitted fabric "A" that is connected to both ends of the infant holding part 10 in the longitudinal direction of the annular body. The shoulder pad part 30 is formed

of a low elastic knitted fabric "A" that is connected to both ends of the belt part 20 and has a gradually increase in width between both sides in the longitudinal direction of the annular body.

[0062] The maximum width W that corresponds to a central part in a longitudinal direction of an annular body as used herein is to describe a breadth but not intended to find a distance in the longitudinal direction of the wide annular body. In addition, the central part in the longitudinal direction of the annular body as used herein means a criterion that is used when a position of the infant holding part 10 is considered to be a center. The baby sling according to the present embodiment is in an annular shape. Thereby, there is no central part around the infant holding part 10 based on the figure. That is, the central part in the longitudinal direction of the annular body means a conformation under a prior condition to specify a center of the infant holding part 10.

[0063] Especially in the present embodiment, a case that front and reverse surfaces are same in appearance as shown in Fig. 1 is described. However, in the practice of the present invention, it is not always necessary that the belt part 20 keeps a uniform length.

[0064] In the baby sling according to the present embodiment, as shown in Fig. 10, an infant holding part 10 that holds an infant has a maximum width W that corresponds to a central part in a longitudinal direction (circumferential direction) of an annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body are formed of a knitted fabric "A" that has a low elasticity in a width direction which is at right angle to the longitudinal direction of the annular body and a center side in the longitudinal direction of the annular body is formed of a knitted fabric "B" that has a high elasticity in the width direction which is at right angle to the longitudinal direction of the annular body. Thereby, an infant's body weight is applied to the high elastic knitted fabric "B" and both sides in the longitudinal direction of the annular body are guarded with the low elastic knitted fabric "A". Thus, the baby sling can stably hold the infant. In addition, a shoulder pad part 30 is formed to be connected to both ends of a belt part 20 which is formed to be connected to both ends of the infant holding part 10 in the longitudinal direction of the annular body. Thereby, the infant's body weight can be dispersed without concentration on one part of a shoulder and fatigue on the shoulder of a person who holds the infant can be reduced. Moreover, the infant holding part 10, the belt part 20 and the shoulder pad part 30 are integrally knitted together to form an annular shape. Thereby, there is no possibility that some parts are torn or elongated with a seam partially open. Accordingly, a safe and secure baby sling can be provided.

[0065] Thus, there is provided a baby sling that can stably hold an infant at the infant holding part 10 without change in a whole length of the annular body.

[0066] In this embodiment, as shown in the lower part

of Fig. 1, the infant holding part 10 has the maximum width W that corresponds to the central part in the longitudinal direction of the annular body and a gradually decrease in width, which results from a gradual decrease in number of stitches, between both sides in the longitudinal direction of the annular body, wherein the infant holding part 10 consists of outer parts 11, additional parts 13 and an inner part 12. The outer parts 11, which correspond to both sides in the longitudinal direction of the annular body, are formed of a knitted fabric "A" that has a low elasticity in the longitudinal direction of the annular body. The additional parts 13, which are located lateral to outer parts 11, are formed of a low elastic knitted fabric "C" that has an increase in width resulting from a gradual increase in number of stitches and a decrease in width also. Besides, the outer parts 11 are arranged at both sides in the longitudinal direction of the annular body and formed of a knitted fabric "A" that has a low elasticity in the longitudinal direction of the annular body. The inner part 12, which corresponds to the central part in the longitudinal direction of the annular body, is formed of a knitted fabric "B" that has a high elasticity in the width direction which is at right angle to at least the longitudinal direction of the annular body. In addition, the additional part 13 is knitted with a plain stitch so as to be involved in the width direction, which is at right angle to the longitudinal direction of the annular body, of the infant holding part 10. This makes the outer part 11 and additional part 13 thicker. Even if the infant is carried with his or her legs hanging out of the baby sling as shown in Fig. 11a, there is no possibility that the outer part 11 and the additional part 13 bite into the infant's legs. Thereby, a burden to the infant is reduced.

[0067] The infant holding part 10 as used herein has a center that is curved downward to form a convex shape when the baby sling is folded in two so as to be at right angles to each other in the longitudinal direction of the annular body. Thereby, it readily weighs down with the infant's weight and a center of gravity is created in the infant holding part 10 or an adjacent part thereof to maintain a stable balance. Therefore, the baby sling may be a supportive device to hold an infant that it is easy to use even if the infant is carried as shown in Fig. 11a.

[0068] Especially when the infant is carried as shown in Fig. 11b, the infant holding part 10 has a center that is curved downward to form a convex shape and readily weighs down with the infant's weight. A center of gravity is created in the infant holding part 10 or an adjacent part thereof, thereby providing a stable feeling when carrying the infant.

[0069] Outer parts 11 and 31 especially having a uniform width correspond to a rim of the infant holding part 10 and a rim of the shoulder pad part 30, respectively. Thereby, the outer parts 11 and 31 are very low in stretchability while an inner part 12 of the infant holding part 10 and an inner part 32 of the shoulder pad part 30 are elastic. Therefore, the baby sling has a structure enough to sustain a weight, wherein improvement in appearance

and functional beauty are represented.

[0070] As an example, the shoulder pad part 30 has a center that is curved upward to have a convex shape when the baby sling is folded in two so as to be at right angles to each other in the longitudinal direction of the annular body as shown in Fig. 13. Thereby, when the convex-shaped portion is placed on a shoulder as shown in Fig. 11a, the infant's body weight can be a composition of vectors going from an upper side and a lateral side of the shoulder. Therefore, even a person who is likely to have a stiff shoulder can use it without having the stiff shoulder. In addition, the baby sling may not put a burden on an adjacent part of a neck. Thus, the user's burden such as fatigue can be reduced.

[0071] In the embodiment shown in Fig. 1, the shoulder pad part 30 consists of the outer part 31 that is formed of a low elastic knitted fabric "A" and the inner part 32 that is formed of a high elastic knitted fabric "B". However, a person (adult) who carries an infant with the baby sling has an approximately certain range in shoulder width and the baby sling may have hardly an uneven surface even with a shoulder pad for clothing. Thereby, the inner part 32 that is formed of a high elastic knitted fabric "B" may be formed as the shoulder pad part 30 like the outer part 31.

[0072] That is, as shown in Fig. 12, the shoulder pad part 30 may be formed to have an increase in part of width in a width direction which is at right angle to a longitudinal direction of an annular body. Alternatively, the shoulder pad part 30 may be formed to make a width (not shown) in the width direction which is at right angle to the longitudinal direction of the annular body same as a width of the belt part 20 or make it slightly widen compared to the width of the belt part 20.

SECOND EMBODIMENT

[0073] Fig. 12 shows a baby sling according to a second embodiment of the invention in which a shoulder pad part 30 has some increase in part of width in a width direction which is at right angle to a longitudinal direction of an annular body. The shoulder pad part 30 has the increased width which is longer than a width of a belt part 20 by 10 to 30%. Thereby, a burden on a shoulder of a person who carries an infant with the baby sling can be shared and reduced. Especially in the second embodiment shown in Fig. 12, the shoulder pad part 30 is an extension of the same rib stitch as the belt part 20. Therefore, workability may be improved.

[0074] In the baby sling according to the second embodiment of the invention, the shoulder pad part 30 has some increase in part of width in the width direction which is at right angle to the longitudinal direction of the annular body by 10 to 30% compared to the width of the belt part 20. However, an infant's body weight is about 10 kg. Thereby, the shoulder pad part 30 may be arranged with the belt body 20 not to have an extra width. Alternatively, the shoulder pad part 30 may be formed to have the same

width as the belt body 20. In addition, an additional part 13 is located lateral to an outer part 11 and formed of a low elastic knitted fabric "C" that is knitted with a plain stitch so as not to have expansion and contraction as well as the outer part 11, wherein the additional part 13 is formed to be connected to the outer part 11. A mesh stitch, a pattern stitch or the like is not applied to the plain stitch that is applied to the additional part 13, wherein a property of being involved that is shown in the plain stitch is utilized directly.

[0075] That is, the baby sling according to the second embodiment of the invention comprises an infant holding part 10, a belt part 20 and a shoulder pad part 30 integrally knitted together to form an annular body. The infant holding part 10 has a maximum width W that corresponds to a central part in a longitudinal direction of an annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body are formed of a knitted fabric "A" that has a low elasticity in the longitudinal direction of the annular body and a center side in the longitudinal direction of the annular body is formed of a knitted fabric "B" that has a high elasticity in a width direction which is at right angle to the longitudinal direction of the annular body. The belt part 20 is formed of a low elastic knitted fabric "A" that is connected to both ends in a longitudinal direction of the infant holding part 10.

[0076] In the baby sling according to the second embodiment of the invention, the infant holding part 10 that holds an infant has the maximum width W that corresponds to the central part in the longitudinal direction of the annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body are formed of a knitted fabric "A" that has a low elasticity in the width direction which is at right angle to the longitudinal direction of the annular body and the center side in the longitudinal direction of the annular body is formed of a knitted fabric "B" that has a high elasticity in the width direction which is at right angle to the longitudinal direction of the annular body. Thereby, the infant's body weight is applied to the high elastic knitted fabric "B" and both sides in the longitudinal direction of the annular body are guarded with the low elastic knitted fabric "A". Therefore, the baby sling can stably hold the infant. In addition, the shoulder pad part 30 is formed to be connected to both ends of the belt part 20 that is formed to be connected to both ends in the longitudinal direction of the infant holding part 10. Thereby, if the belt part 20 is arranged to have an appropriate width so as not to concentrate the infant's body weight on one part of a shoulder, a force that is applied to the shoulder can be dispersed and fatigue on the shoulder of a person who holds the infant can be reduced. Moreover, the infant holding part 10, the belt part 20 and the shoulder pad part 30 are integrally knitted together to form an annular shape. Therefore, there is no possibility that some parts

are torn or elongated with a seam partially open. Accordingly, a safe and secure baby sling can be provided. Thus, there is provided a baby sling that can stably hold an infant at the infant holding part 10 without change in a whole length of the annular body.

[0077] A baby sling including an infant holding part 10, a belt part 20 and a shoulder pad part 30 integrally knitted together to form an annular shape is knitted with a single yarn using a seamless flat knitting machine. Accordingly, the baby sling including the infant holding part 10, the belt part 20 and the shoulder pad part 30 integrally knitted together to form an annular shape using a seamless flat knitting machine is knitted with a single yarn. Therefore, there is no possibility that the baby sling has a lack of functions with the seam partially open.

[0078] The low elastic knitted fabric "A" that corresponds to both sides of the infant holding part 10 in the longitudinal direction of the annular body and the knitted fabric "B", which corresponds to the center side in the longitudinal direction of the annular body, having a high elasticity in the width direction which is at right angle to the longitudinal direction of the annular body are knitted with a rib stitch and a plain stitch, respectively.

[0079] Accordingly, the low elastic knitted fabric "A" that corresponds to both sides of the infant holding part 10 in the longitudinal direction of the annular body and the high elastic knitted fabric "B" that corresponds to the center side in the longitudinal direction of the annular body are knitted with a rib stitch and a plain stitch, respectively. The rib stitch and the plain stitch are highly-reliable knitting. Therefore, a product which is stable in quality control is provided.

[0080] In a baby sling including an infant holding part 10 which is formed so that both sides in a longitudinal direction of an annular body are formed of double sheets of a low elastic knitted fabric "A", elasticity in the longitudinal direction of the annular body can be restrained as much as possible. Therefore, the infant's buttocks can stably sink down in the baby sling.

[0081] In addition, both sides of the infant holding part 10 in the longitudinal direction of the annular body, which are formed of a low elastic knitted fabric "A", are knitted with a rib stitch. A center side in the longitudinal direction of the annular body, which is formed of a high elastic knitted fabric "B", is knitted with a stretch plain stitch, a bare plain stitch and/or a purl stitch.

[0082] In the baby sling according to the present embodiment, both sides of the infant holding part 10 in the longitudinal direction of the annular body, which are formed of a low elastic knitted fabric "A", are knitted with a rib stitch. The center side in the longitudinal direction of the annular body, which is formed of a high elastic knitted fabric "B", is knitted with a stretch plain stitch, a bare plain stitch and/or a purl stitch. Therefore, only elasticity of the infant holding part 10 in the longitudinal direction of the annular body can be reduced. In addition, the center side in the longitudinal direction of the annular body may be formed of a high elastic knitted fabric "B".

Therefore, reliability of the baby sling can be improved.

[0083] In a baby sling according to the embodiment shown in Fig. 1, an infant holding part 10 is provided with an inner part 12 which is located inside an outer part 11 and an additional part 13 which is located lateral to the outer side 11. However, in the practice of the present invention, an infant holding part 10 may be provided with an inner part 12 which is located inside an outer part 11 and an additional part which is located inside the outer part 11 and lateral to the inner part 12. Alternatively, outer parts 11 and 31 may be double knitted.

[0084] Besides, the additional part 13 which is located lateral to the outer part 11 may be double knitted with the outer part 11. Alternatively, the outer part 11 and the additional part 13 may be double knitted with the inner part 12.

[0085] Moreover, the outer part 31 according to the present embodiment is knitted with a rib stitch to adopt a property to be involved by the rib stitch itself. However, in the practice of the present invention, only additional part 13 may be formed in an annular shape (hollow string shape). Alternatively, the outer part 11 and the additional part 13 may be integrally formed in a cylindrical shape.

[0086] Furthermore, in the baby sling according to the embodiment shown in Fig. 1, both sides extending from the outer part 11 to the outer part 31 may be formed in an annular shape.

[0087] Especially in the present embodiment, the outer part 11 and the additional part 13 are integrally knitted together with the belt part 20. However, in the practice of the present invention, two sides each of the outer part 11, the additional part 13 and the belt part 20 may be double knitted.

[0088] Especially in the present embodiment, both sides in the longitudinal direction of the infant holding part 10, which are formed of a low elastic knitted fabric "A" or a low elastic knitted fabric "C", are knitted with a rib stitch. However, a stretch plain stitch and/or a bare plain stitch may be applied thereto instead. The center side in the longitudinal direction, which is formed of a high elastic knitted fabric "B", may be knitted with a stretch plain stitch, a bare plain stitch and/or a purl stitch.

THIRD EMBODIMENT

[0089] Fig. 13 shows a baby sling according to a third embodiment of the invention. As shown in Fig. 13, a shoulder pad part 30 has a center that is curved upward to form a convex shape when the baby sling is folded in two so as to be at right angles to each other in a longitudinal direction of an annular body. In this case, as shown in Fig. 11a, when the curved convex-shaped portion is placed on a shoulder, to be precise when a concave part that is inside the convex-shaped portion is placed on the shoulder which has a convex shape, an infant's body weight can be a composition of vectors going from an upper side and a lateral side of the shoulder. Thereby, even a person who is likely to have a stiff shoulder can

use it so that he or she is not likely to have the stiff shoulder. Moreover, it does not put a burden on an adjacent part of a neck. Therefore, the user's burden such as fatigue can be reduced.

[0090] Thus, the baby sling allows a burden on shoulder of a person who carries an infant to be shared and reduced. Especially in the third embodiment of the invention which is shown in Fig. 13, the shoulder pad part 30 may be formed to be an extension of the same plain stitch as a belt part 20. Therefore, workability may be improved.

[0091] A baby sling according to a third embodiment of the invention comprises an infant holding part 10, a belt part 20 and a shoulder pad part 30 integrally knitted together to form an annular shape. The infant holding part 10 has a maximum width W that corresponds to a central part in a longitudinal direction of an annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body are formed of a knitted fabric "A" that has a low elasticity in the longitudinal direction of the annular body and a center side in the longitudinal direction of the annular body is formed of a knitted fabric "B" that has a high elasticity in a width direction which is at right angle to the longitudinal direction of the annular body. The belt part 20 is formed of a low elastic knitted fabric "A" that is connected to both ends in a longitudinal direction of the infant holding part 10. The shoulder pad part 30 has a maximum width X that corresponds to a central part in the longitudinal direction of the annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body are formed of a knitted fabric "A" that has a low elasticity in the longitudinal direction of the annular body and a center side in the longitudinal direction of the annular body is formed of a knitted fabric "B" that has a high elasticity in the width direction which is at right angle to the longitudinal direction of the annular body.

[0092] In the baby sling according to the third embodiment of the invention, the infant holding part 10 that holds an infant has the maximum width W that corresponds to the central part in the longitudinal direction of the annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body are formed of a knitted fabric "A" that has a low elasticity in the longitudinal direction of the annular body and the center side in the longitudinal direction of the annular body is formed of a knitted fabric "B" that has a high elasticity in the width direction which is at right angle to the longitudinal direction of the annular body. Thereby, the infant's body weight is applied to the high elastic knitted fabric "B" and both sides in the longitudinal direction of the annular body are guarded with the low elastic knitted fabric "A". Therefore, the baby sling can stably hold the infant. In addition, the shoulder pad part 30 has the maximum width X that corresponds to the

central part in the longitudinal direction of the annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body, wherein both sides in the longitudinal direction of the annular body are formed of a knitted fabric "A" that has a low elasticity in the longitudinal direction of the annular body and the center side in the longitudinal direction of the annular body is formed of a knitted fabric "B" that has a high elasticity in the width direction that is at right angle to the longitudinal direction of the annular body. Thereby, a force that is applied to the shoulder can be dispersed and fatigue on the shoulder of a person who holds the infant can be reduced. Moreover, the infant holding part 10, the belt part 20 and the shoulder pad part 30 are integrally knitted together to form an annular shape. Therefore, there is no possibility that some parts are torn or elongated with a seam partially open. Accordingly, a safe and secure baby sling can be provided. Thus, there is provided a baby sling that can stably hold an infant at the infant holding part 10 without change in a whole length of the annular body.

[0093] A baby sling including an infant holding part 10, a belt part 20 and a shoulder pad part 30 integrally knitted together to form an annular shape is knitted with a single yarn using a seamless flat knitting machine. Accordingly, the baby sling including the infant holding part 10, the belt part 20 and the shoulder pad part 30 integrally knitted together to form an annular shape using a seamless flat knitting machine is knitted with a single yarn. Therefore, there is no possibility that the baby sling has a lack of functions with a seam partially open.

[0094] The low elastic knitted fabric "A" which corresponds to both sides of the infant holding part 10 in the longitudinal direction of the annular body and the knitted fabric "B", which corresponds to the center side in the longitudinal direction of the annular body, having a high elasticity in the width direction which is at right angle to the longitudinal direction of the annular body are knitted with a rib stitch and a plain stitch, respectively.

[0095] Accordingly, the low elastic knitted fabric "A" which corresponds to both sides of the infant holding part 10 in the longitudinal direction of the annular body and the high elastic knitted fabric "B" which corresponds to the center side in the longitudinal direction of the annular body are knitted with a rib stitch and a plain stitch, respectively. The rib stitch and the plain stitch are highly-reliable knitting. Therefore, a product which is stable in quality control is provided.

[0096] In addition, both sides of the infant holding part 10 in the longitudinal direction of the annular body are formed by a single knitting of the low elastic knitted fabric "A". A mechanical strength thereof can restrain elasticity in the longitudinal direction of the annular body as much as possible. Thereby, the infant's buttocks can stably sink down in the baby sling. Furthermore, both sides of the infant holding part 10 in the longitudinal direction of the annular body, which are formed of a low elastic knitted fabric "A", may be knitted with a rib stitch while a center

side in the longitudinal direction of the annular body, which is formed of a high elastic knitted fabric "B", may be knitted with a stretch plain stitch, a bare plain stitch and/or a purl stitch.

5 [0097] A baby sling includes an infant holding part 10 that holds an infant in which the infant holding part 10 has a maximum width W that corresponds to a central part in a longitudinal direction of the baby sling and a gradually decrease in width between both sides in the longitudinal direction of the baby sling, wherein both sides in the longitudinal direction of the baby sling consists of outer parts 11 that are formed of a knitted fabric "A" which has a low elasticity in a width direction which is at right angle to the longitudinal direction of the baby sling and a center side in the longitudinal direction of the baby sling consists of an inner part 12 that is formed of a knitted fabric "B" which has a high elasticity in the width direction which is at right angle to the longitudinal direction of the baby sling. Thereby, the infant's body weight is applied to the inner part 12 that is formed of the high elastic knitted fabric "B" while both sides in the longitudinal direction of the baby sling are guarded with the outer part 11 that is formed of the low elastic knitted fabric "A". Therefore, the baby sling can stably hold the infant. Accordingly, a safe and secure baby sling can be provided.

Claims

30 1. A baby sling including an infant holding part that receives an infant's body, a shoulder pad part that gives a sense how much the infant weighs to a shoulder of a person who carries the infant and a belt part that gives the sense of the infant's body weight that is applied to the infant holding part to the shoulder pad part integrally knitted together to form an annular shape, **characterized in that:**

the infant holding part has a maximum width that corresponds to a width in a direction which is at right angle to a longitudinal direction of a central part in a circumferential direction of an annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body in which both sides in the longitudinal direction of the annular body are formed of a knitted fabric that has a low elasticity in the longitudinal direction of the annular body and a center side in the longitudinal direction of the annular body is formed of a knitted fabric that has a high elasticity in a width direction which is at right angle to at least the longitudinal direction of the annular body;

the belt part is formed of a low elastic knitted fabric that is connected to both ends in a longitudinal direction of the infant holding part; and the shoulder pad part is formed of both a low elastic knitted fabric that is connected to both

ends of the belt part and a knitted fabric, which is formed inside the shoulder pad part, having a high elasticity in the width direction which is at right angle to at least the longitudinal direction of the annular body.

2. A baby sling including an infant holding part that receives an infant's body, a shoulder pad part that gives a sense that how much the infant weighs to a shoulder of a person who carries the infant and a belt part that gives the sense of the infant's body weight to the shoulder pad part integrally knitted together to form an annular shape, **characterized in that:**

the infant holding part has a maximum width that corresponds to a width in a direction which is at right angle to a longitudinal direction of a central part in a circumferential direction of an annular body and a gradually decrease in width between both sides in the longitudinal direction of the annular body in which both sides in the longitudinal direction of the annular body are formed of a knitted fabric that has a low elasticity in the longitudinal direction of the annular body and a center side in the longitudinal direction of the annular body is formed of a knitted fabric that has a high elasticity in a width direction which is at right angle to at least the longitudinal direction of the annular body;

the belt part is formed of a low elastic knitted fabric that is connected to both ends in a longitudinal direction of the infant holding part; and the shoulder pad part is formed of a low elastic knitted fabric that is connected to both ends of the belt part.

3. A baby sling according to one of claims 1 and 2 **characterized in that:**

the infant holding part has a center that is curved outward to have a convex shape when an entire baby sling is folded in two so as to be at right angles to each other in the longitudinal direction of the annular body at both positions where the shoulder pad part and the infant holding part are divided in two.

4. A baby sling according to one of claims 1 and 3 **characterized in that:**

the shoulder pad part has a center that is curved outward to form a convex shape when the entire baby sling is folded in two so as to be at right angles to each other in the longitudinal direction of the annular body at both positions where the shoulder pad part and the infant holding part are divided in two.

5. A baby sling according to one of claims 1 to 4 **characterized in that:**

the baby sling including the infant holding part, the belt part and the shoulder pad part integrally knitted together to form an annular shape is knitted with a single yarn using a seamless flat knitting machine.

6. A baby sling according to one of claims 1 to 5 **characterized in that:**

both sides of the infant holding part in the longitudinal direction of the annular body, which are formed of a low elastic knitted fabric, are knitted with a rib stitch and the center side in the longitudinal direction of the annular body, which is formed of a knitted fabric that has a high elasticity in the width direction which is at right angle to at least the longitudinal direction of the annular body, is knitted with a plain stitch which shapes a mesh or a pattern.

7. A baby sling according to one of claims 1 to 6 **characterized in that:**

both sides of the infant holding part in the longitudinal direction of the annular body are formed of double sheets of a low elastic knitted fabric.

8. A baby sling according to one of claims 1 to 7 **characterized in that:**

both sides of the infant holding part in the longitudinal direction of the annular body, which are formed of a low elastic knitted fabric, are knitted with a rib stitch and the center side in the longitudinal direction of the annular body, which is formed of a high elastic knitted fabric, is knitted with one of a plain stitch which shapes a mesh or a pattern, a stretch plain stitch, a bare plain stitch or a purl stitch.

FIG. 1

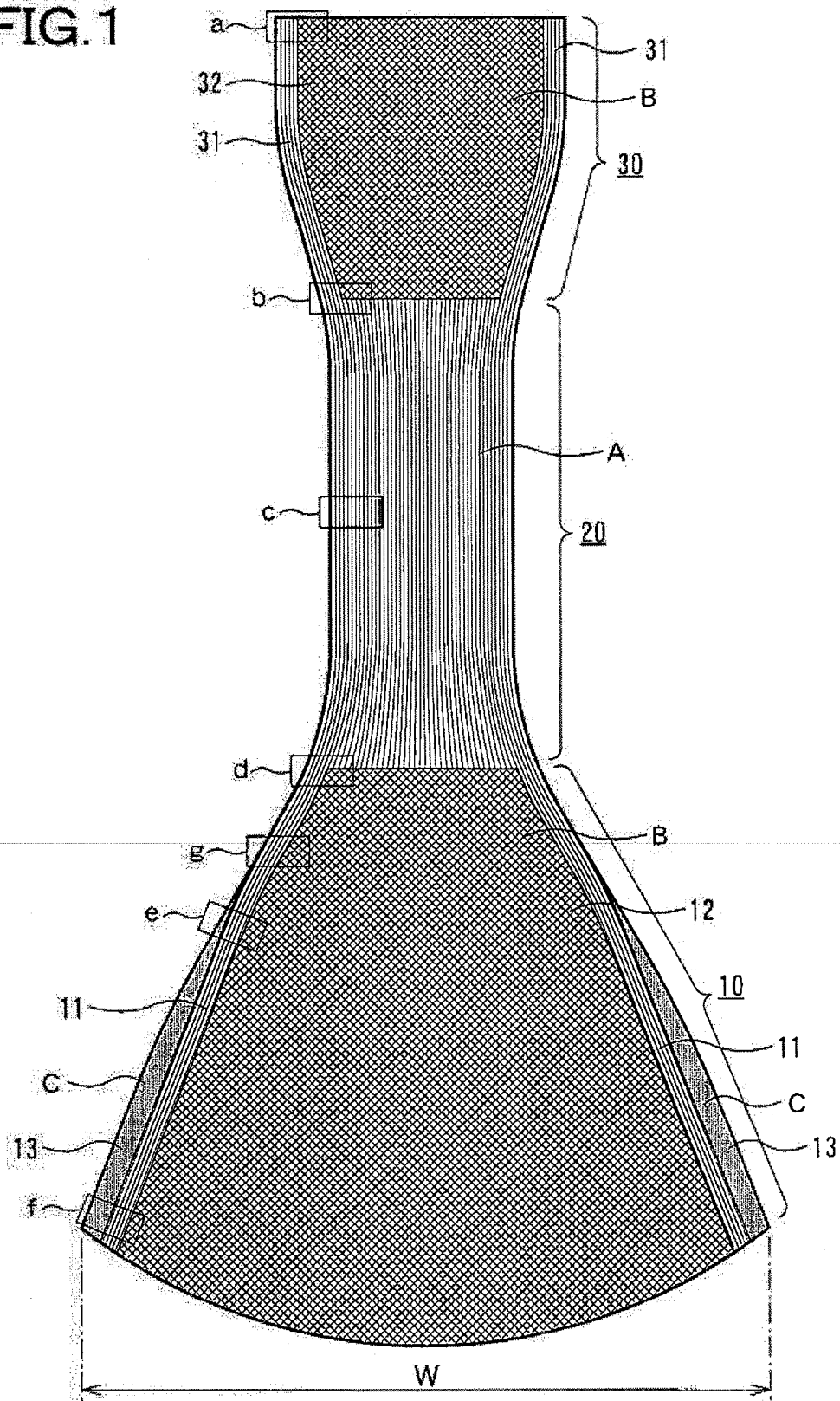


FIG.2

-  The first knitting process ($\mathcal{Q}$)
-  The second knitting process ($\mathcal{O}$)
-  The third knitting process ($\mathcal{Q} + \mathcal{A}$)
-  The fourth knitting process ($\mathcal{Q} + \mathcal{N}$)
-  The fifth knitting process ($\mathcal{O} + \mathcal{N}$)
-  The sixth knitting process ($\mathcal{O} + \mathcal{A}$)

FIG.3

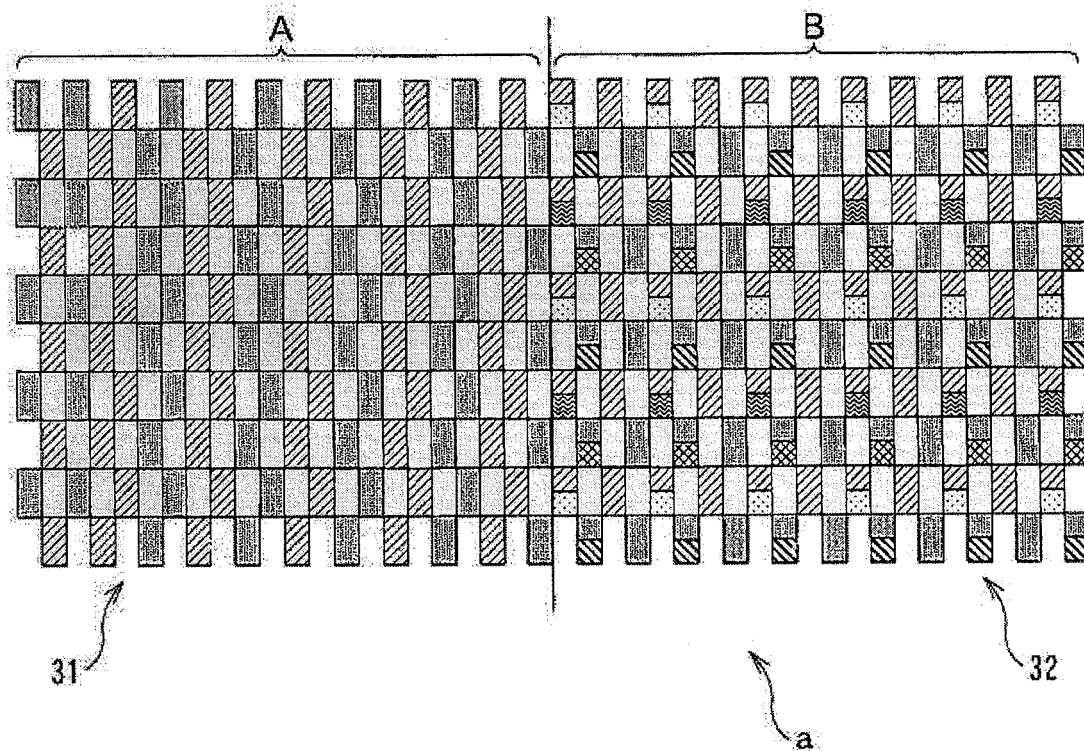


FIG. 4

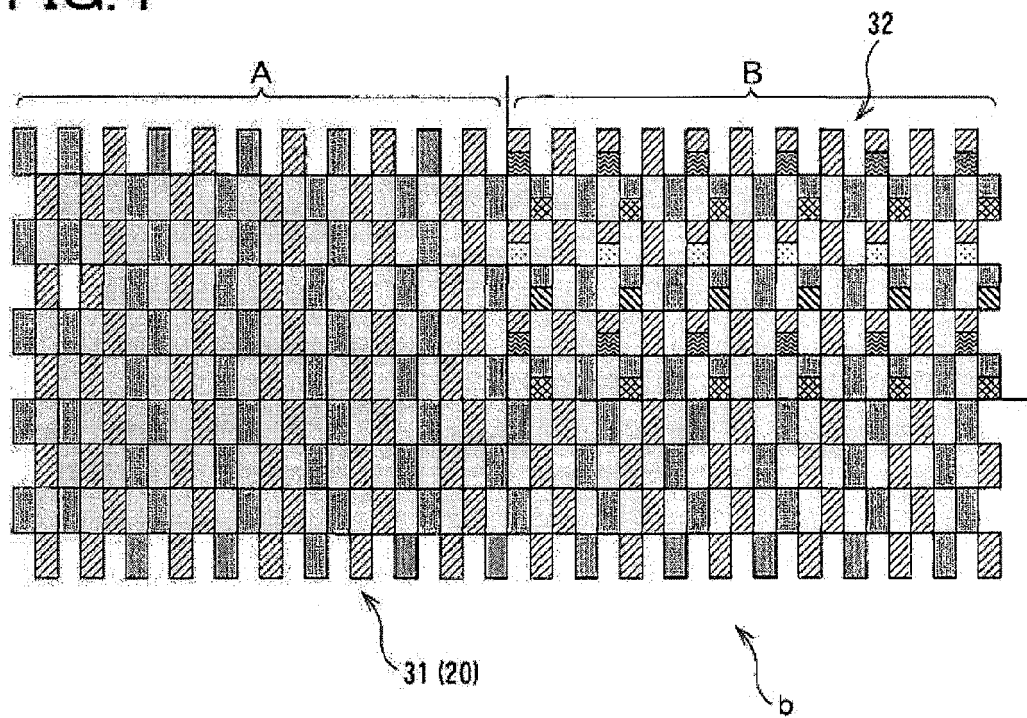


FIG. 5

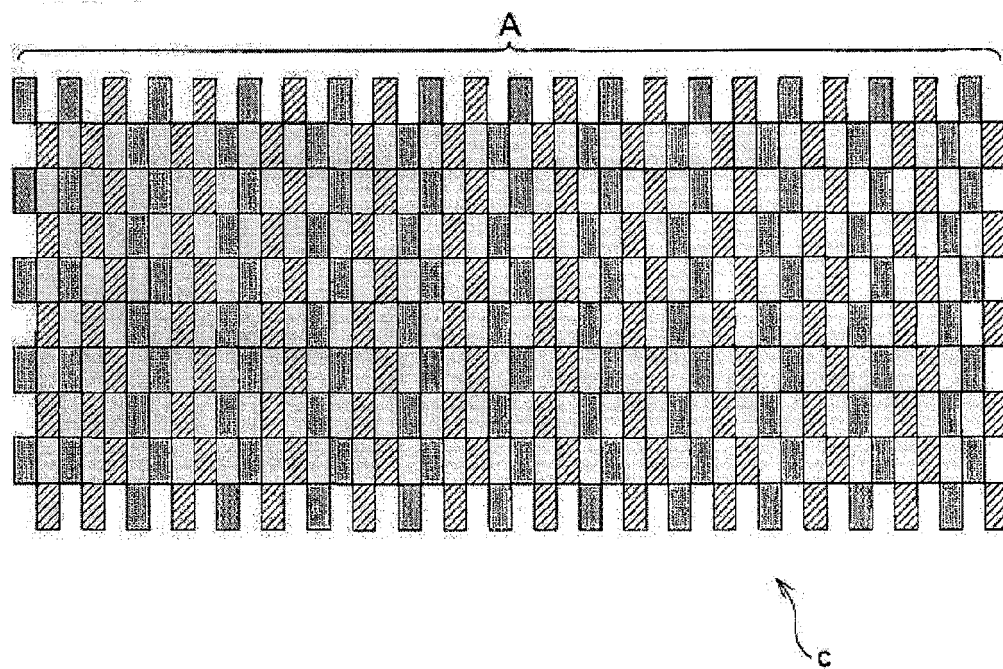


FIG. 6

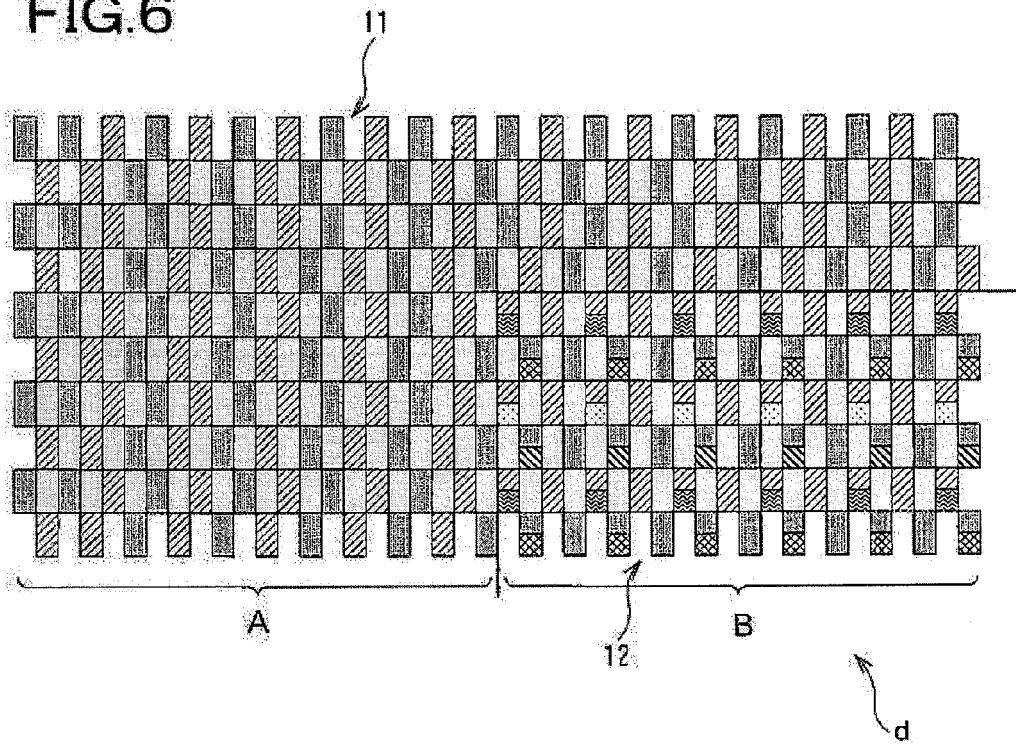


FIG. 7

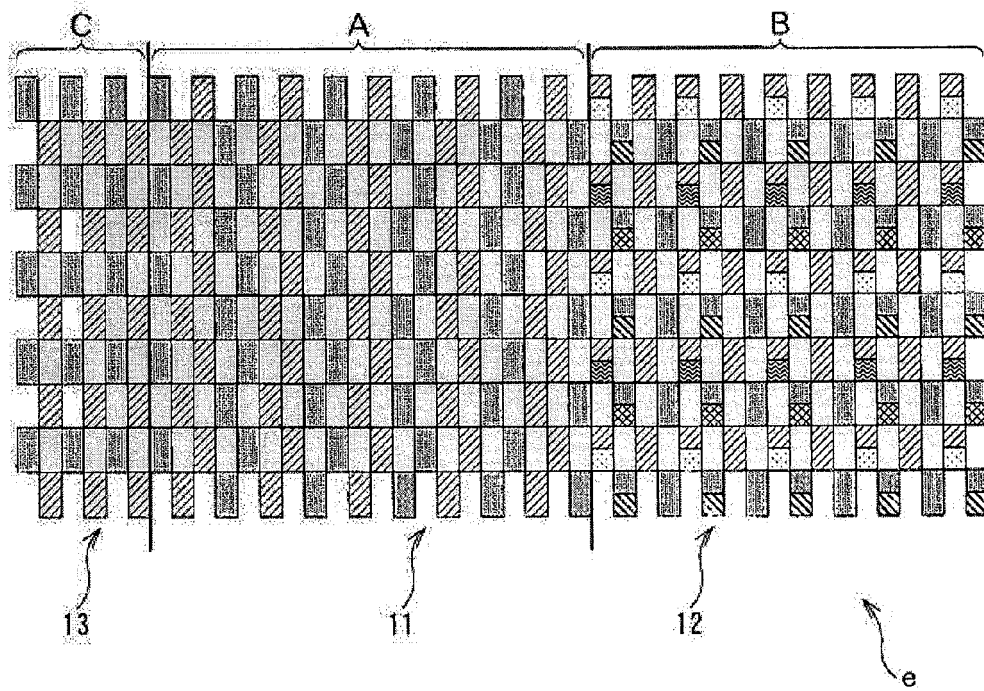


FIG.8

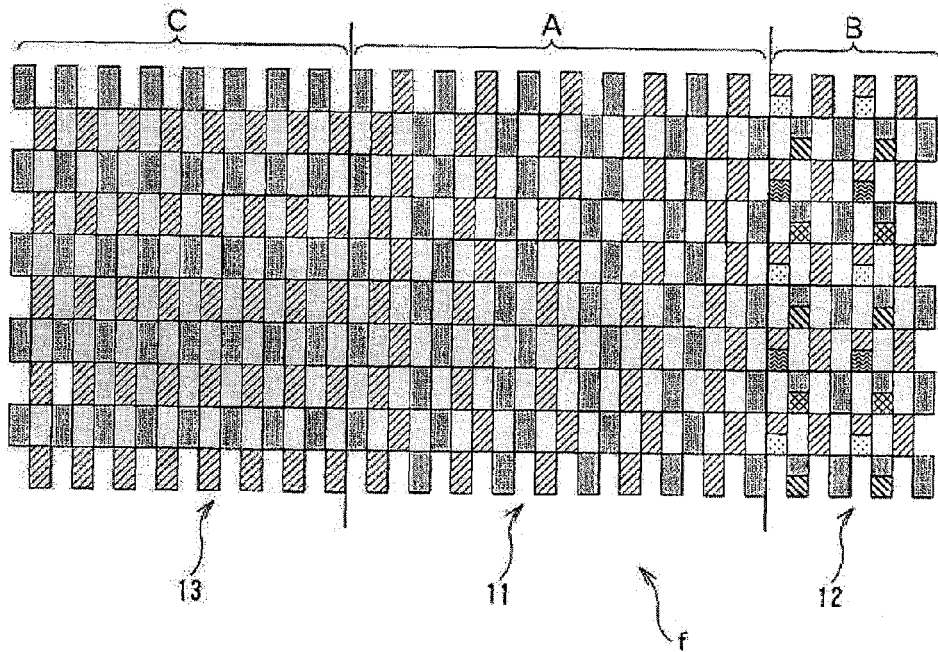


FIG.9

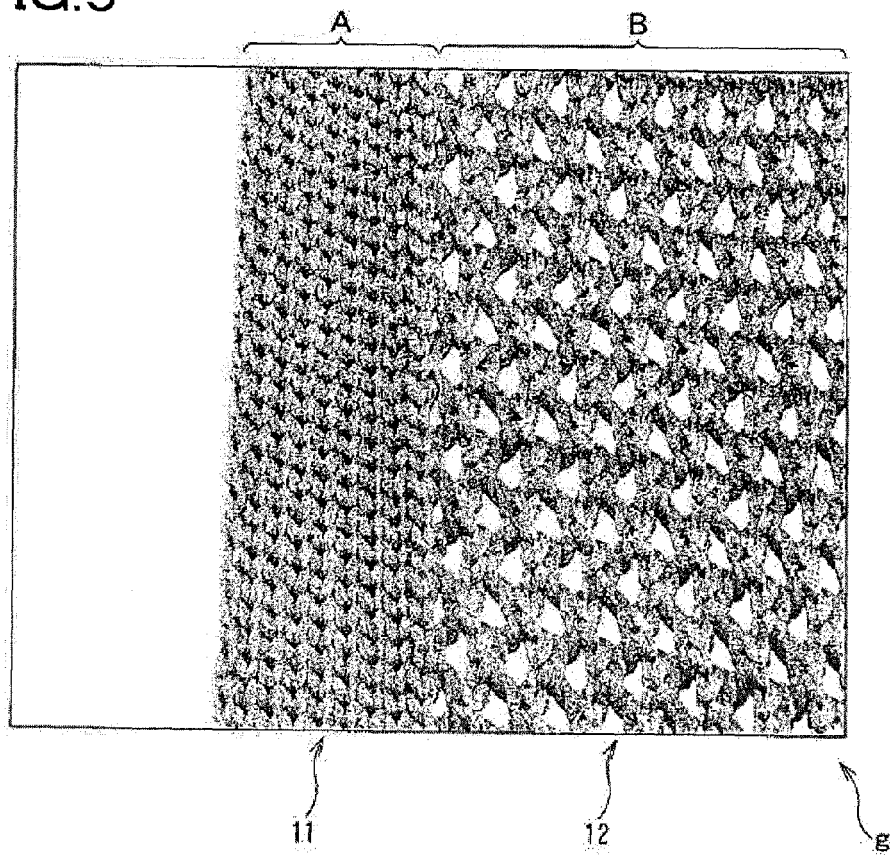


FIG. 10

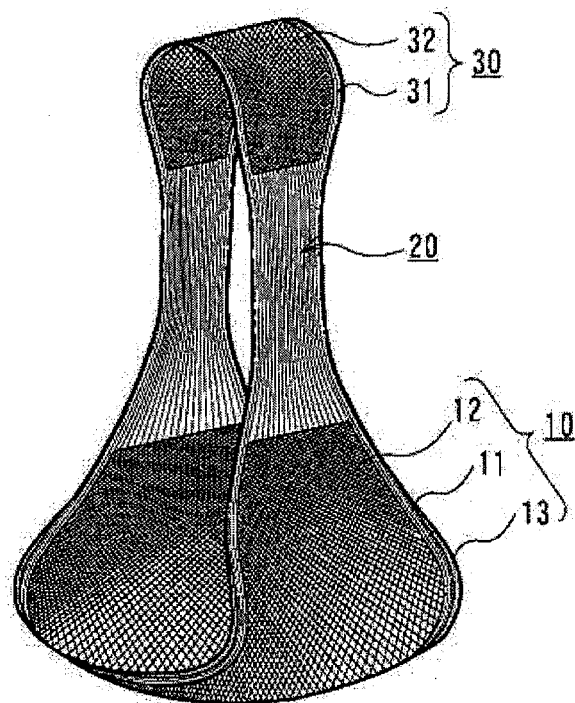


FIG.11

(a)

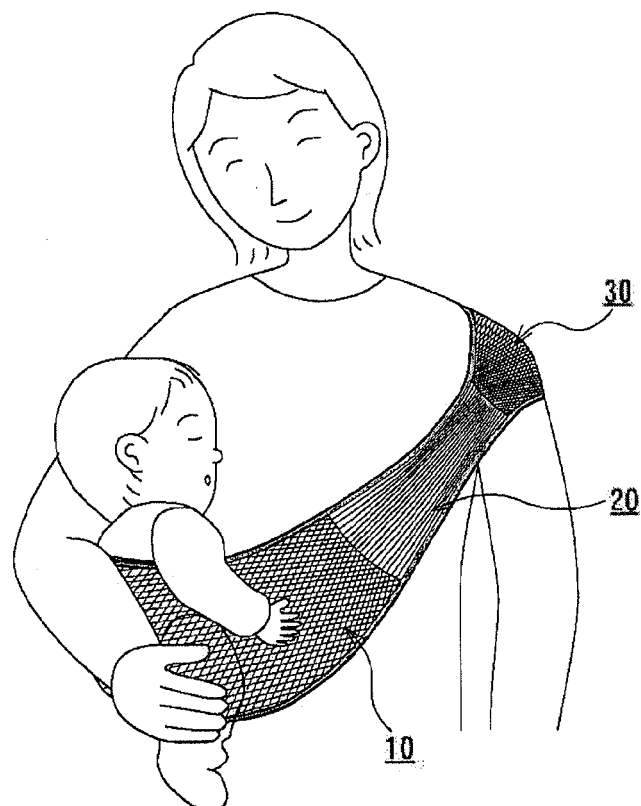


FIG.11

(b)

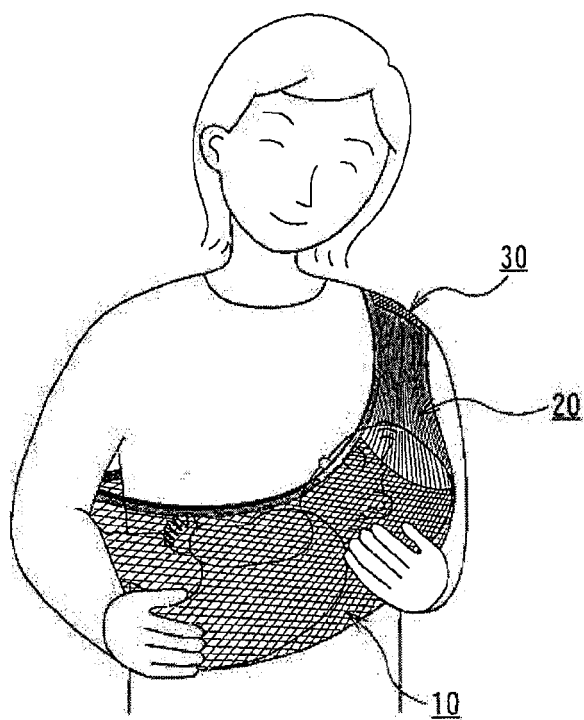


FIG.12

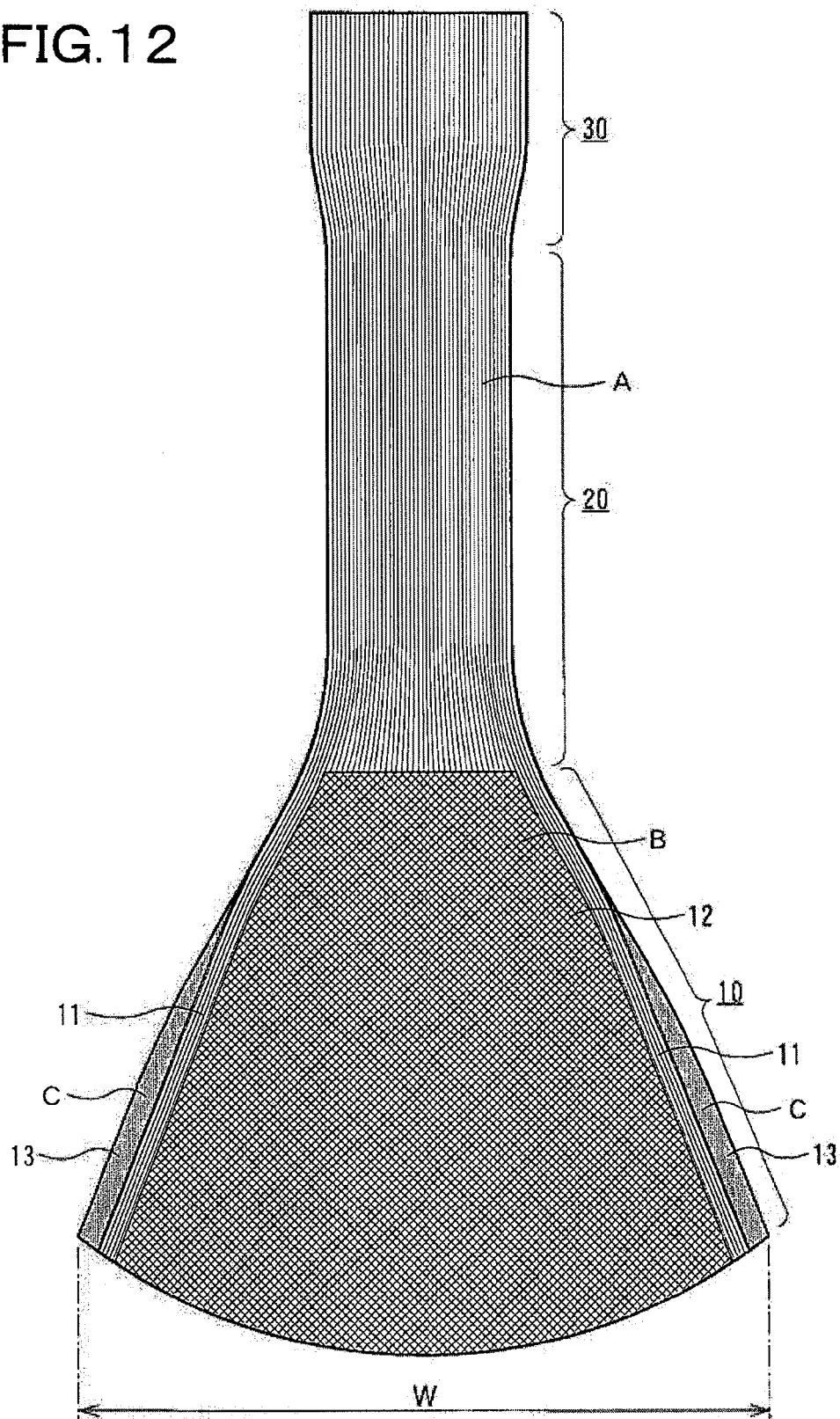
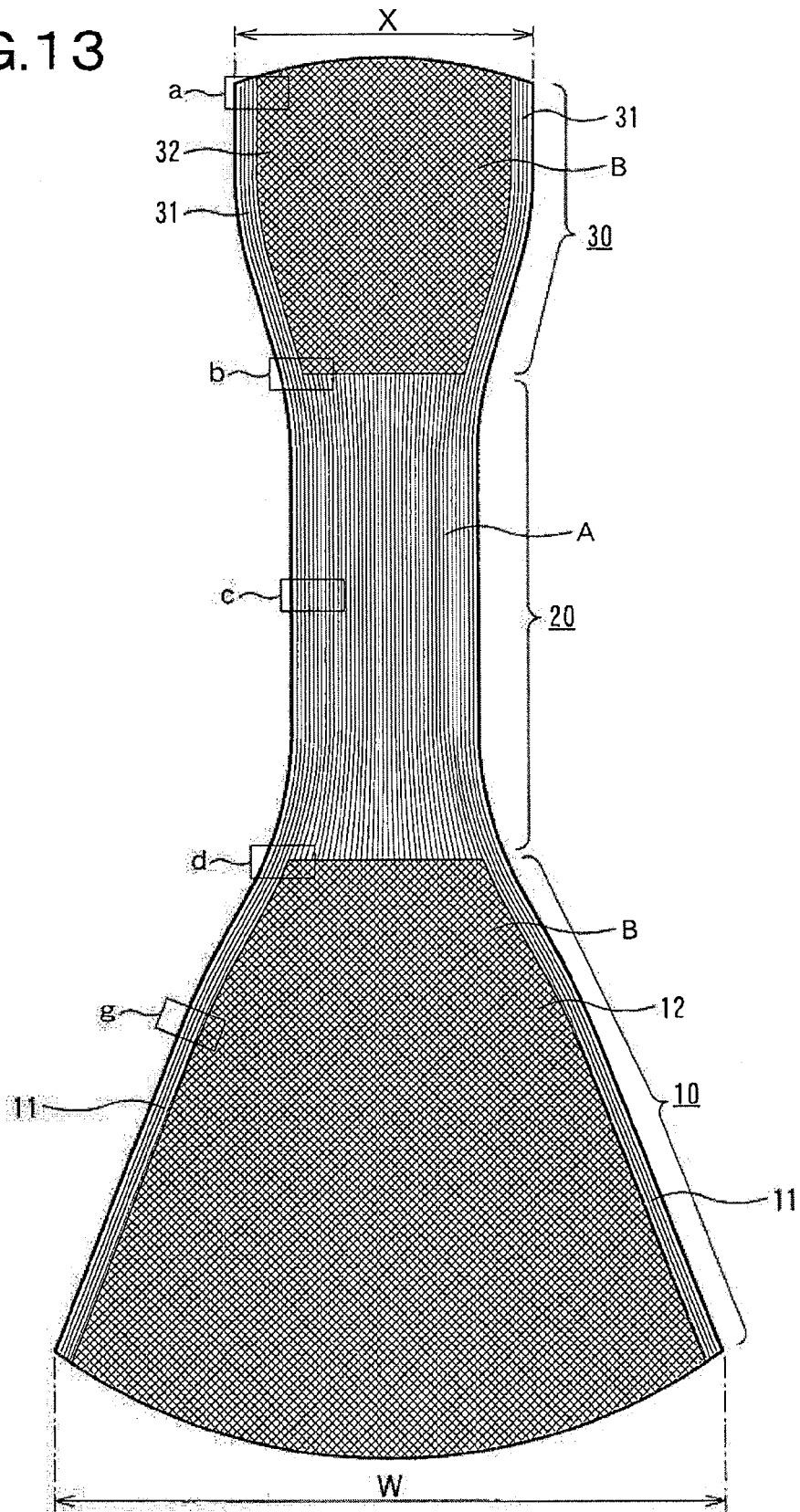


FIG. 13





EUROPEAN SEARCH REPORT

Application Number
EP 11 15 3143

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	JP 2007 075238 A (LUCKY IND) 29 March 2007 (2007-03-29) * paragraphs [0022], [0018], [0024]; figures *	1,2	INV. A47D13/02
A	JP 2008 220669 A (COMBI CO) 25 September 2008 (2008-09-25) * figures *	1,2	
A	JP 59 002258 U (ANONYM) 9 January 1984 (1984-01-09) * figures *	1,2	
A	FR 2 662 339 A1 (SCHLEGEL) 29 November 1991 (1991-11-29) * figures *	1,2	
A	GB 2 453 153 A (DAY) 1 April 2009 (2009-04-01) * figures *	1,2	
A	NL 1 006 025 C1 (LOOMANS) 4 June 1997 (1997-06-04) * figures *	1,2	TECHNICAL FIELDS SEARCHED (IPC) A47D
A	JP 2005 329200 A (NAKAGAWA) 2 December 2005 (2005-12-02) * figures *	1,2	
A	US 6 343 727 B1 (LEACH) 5 February 2002 (2002-02-05) * figures *	1,2	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 24 May 2011	Examiner Kis, Pál
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

1
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 15 3143

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-05-2011

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 2007075238	A	29-03-2007	NONE	
JP 2008220669	A	25-09-2008	NONE	
JP 59002258	U	09-01-1984	JP 61025398 Y2	30-07-1986
FR 2662339	A1	29-11-1991	DE 9106297 U1	17-10-1991
GB 2453153	A	01-04-2009	NONE	
NL 1006025	C1	04-06-1997	NONE	
JP 2005329200	A	02-12-2005	NONE	
US 6343727	B1	05-02-2002	NONE	

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 2007075238 A [0002] [0003] [0004] [0005]
[0006]