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(54) **POSTURE HOLDING STRUCTURE FOR INFANT AND PILLOW FOR INFANT**

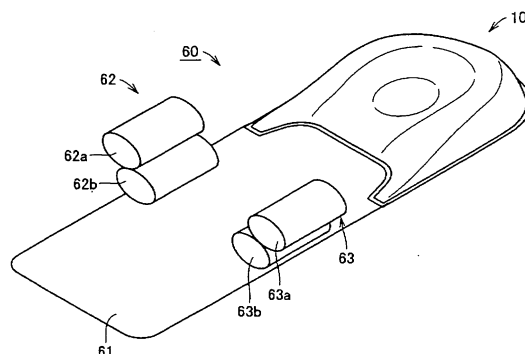
(57) The present invention relates to a baby position holding structure in which a position of a baby is appropriately held so as to prevent oxygen saturation from being lowered, and a baby pillow on which an airway in a throat is not blocked.

A baby position holding tool (60) comprises a mat (61) extending from right to left and up and down, and a pair of body supports (62 and 63) positioned on right and left sides of the mat so as to abut on both sides of a body of a baby laid on the mat. The body supports include lower parts (62b and 63b) supporting rear faces of the

sides of the body of the baby from beneath, respectively and upper parts (62a and 63a) positioned on the lower parts so as to be shifted outward and abut on the side of the body of the baby from the side, respectively.

The pillow (10) comprises a pair of head positioning parts (12) having a first height and supporting both sides of a rear part of the head of the baby from beneath, and a neck supporting part (13) having a second height lower than that of the first height and supporting a neck of the baby positioned by the pair of head positioning parts from beneath.

FIG. 13



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## Description

### TECHNICAL FIELD

**[0001]** The present invention relates to a baby position holding structure in which a position of a baby is appropriately held so as to prevent oxygen saturation from being lowered, and a baby pillow on which an airway in a throat is not blocked.

### BACKGROUND ART

**[0002]** Various proposes are made to hold a position of a baby.

**[0003]** For example, Japanese Utility Model Registration No. 3079785 discloses a baby pillow. According to the baby pillow disclosed in this document, its entire configuration is in the shape of a donut or an inverted U so as to fit a shape of a head of a baby.

**[0004]** Japanese Unexamined Patent Publication No. 2003-70602 discloses a sheet on which the baby is prevented from rolling over when a diaper is exchanged. According to the sheet for preventing the baby from rolling over disclosed in this document, a belt for fixing a chest circumference of the baby and a belt for fixing right and left shoulders of the baby are mounted on the sheet.

**[0005]** Japanese Unexamined Patent Publication No. 11-276312 discloses a tool for preventing rolling over which is conveniently used when a diaper of the baby is exchanged. According to the tool for preventing rolling over disclosed in this document, clothes which can be put on an upper body of the baby is mounted on a sheet.

**[0006]** Japanese National Publication No. 2002-539852 discloses a multifunctional cushion which can prevent the baby from moving and rolling over on a bed during sleep. According to the multifunctional cushion disclosed in this document, it comprises a thin and flat pad and a pair of column-shaped cushions positioned on both sides of the pad.

**[0007]** An example of the donut-shaped baby pillow disclosed in the Japanese Utility Model Registration No. 3079785 is shown in Figs. 26A, 26B and 26C. Fig. 26A is a view showing an example in which the baby is put on the donut-shaped pillow, Fig. 26B is a view showing a state in which the head of the baby is smaller than the donut-shaped pillow shown in Fig. 26A and only a neck part is supported, and Fig. 26C is a view showing a state in which the head of the baby is displaced from the donut-shaped pillow.

**[0008]** According to the donut-shaped pillow 90, originally, the head of the baby is lifted by the donut-shaped pillow so that an entire head part is raised and a rear part of the head of the baby does not become flat. However, as shown in Fig. 26A, since only the head is positioned on the pillow and a position of a lower part from shoulders is not determined, the lower part from the shoulders is moved with respect to the head as shown by dotted lines in the drawing in some cases.

**[0009]** In addition, as shown in Fig. 26B, when a top part of the head of the baby is not supported by the donut-shaped pillow and only the neck part is supported by the donut-shaped pillow, the neck part of the baby is unnaturally lifted so that the baby feel uneasy.

**[0010]** Furthermore, as shown in Fig. 26C, when the head of the baby comes out of the donut-shaped pillow and then the head is lifted by that, the neck part is compressed and an airway in a throat could be blocked.

**[0011]** As the baby rolls over frequently during sleep on the back, the baby often takes an uneasy form as shown in Fig. 27. In the state shown in Fig. 27, the neck part of the baby is bent, so that the oxygen saturation could be lowered because of blockage of the airway of the throat. Furthermore, since the abdomen of the baby is also bent, abdominal breathing is prevented, so that the oxygen saturation could be lowered.

**[0012]** As disclosed in the Japanese Unexamined Patent Publication No. 2003-70602 and Japanese Unexamined Patent Publication No. 11-276312, when the upper body of the baby is restrained by the belt or the clothes, although the baby can be prevented from rolling over, since the movement of the upper body of the baby is almost hindered, it is not suitable for a long use.

**[0013]** According to the multifunctional cushion disclosed in the Japanese National Publication No. 2002-539852, since the pair of columnar cushions are positioned on both sides of the baby, the baby can be allowed to move freely. Meanwhile, since a certain degree of gap is formed between the side of the baby and the cushion, it is difficult to prevent the neck part or the abdomen part of the baby from being bent.

### DISCLOSURE OF THE INVENTION

**[0014]** The present invention was made to solve the above problems and it is an object of the present invention to provide a baby position holding structure which can appropriately hold a position of a baby and prevent oxygen saturation from being lowered.

**[0015]** It is another object of the present invention to provide a baby position holding structure which can prevent a neck part and an abdomen part of a baby from being bent.

**[0016]** It is still another object of the present invention to provide a baby pillow on which a baby can have good sleep.

**[0017]** A baby position holding structure according to the present invention comprises a mat extending from right to left and up and down, and a pair of body supports positioned on right and left sides of the mat so as to abut on both sides of a body of a baby laid on the mat. Each body support includes a lower part supporting a rear face of the side of the body of the baby from beneath, and an upper part positioned on the lower part so as to be shifted outward and abut on the side of the body of the baby from the side.

**[0018]** Preferably, the upper part and the lower part

constituting the body support are made of a flexible material. For example, the upper part is made of a foamed material having a high forming ratio, and the lower part is made of a foamed material having a forming ratio lower than that of the upper part.

**[0019]** According to the present invention having the above constitution, since the lower part of the body support supports the rear face of the side of the body of the baby from beneath and the upper part abuts on the side of the body of the baby from the side, the position of the body of the baby can be firmly fixed and held. Therefore, since the abdomen part is not bent and compressed, the normal abdominal breathing can be maintained and the oxygen saturation can be prevented from being lowered.

**[0020]** When the baby is in the womb of the mother, the baby is in the amniotic fluid and the body of the baby receives pressure from the amniotic fluid all the time. According to a memory at that time or so, when a newborn baby or a premature baby feels pressure on the body so as to be surrounded by a large region, the baby can have a good sleep. According to the present invention having the above constitution, since the pair of body support applies pressure to the body of the baby so as to surround it, the newborn baby or the premature baby can sleep well especially.

**[0021]** Preferably, the upper part is constituted so as to be moved inward as the lower part is pressed by a weight of the baby. Thus, the body of the baby can be further firmly fixed and held.

**[0022]** According to one embodiment, each body support is detachably mounted on the mat. Thus, the distance between the pair of body supports and their positional relation can be adjusted depending on a figure or a size of the body of the baby.

**[0023]** The baby position holding structure may comprise a pillow provided at an upper part of the mat so as to support the head of the baby laid on the mat from beneath. The pillow is detachably mounted on the mat.

**[0024]** Preferably, the pillow comprises a pair of head positioning parts having a first height and supporting both sides of a rear part of the head of the baby from beneath, and a neck supporting part having a second height lower than that of the first height and supporting a neck of the baby positioned by the pair of head positioning parts from beneath.

**[0025]** Since the head of the baby is positioned by the head positioning part and the neck of the baby is horizontally supported by the neck supporting part which is lower than the head positioning part, the airway in the throat of the baby can be appropriately provided without being blocked. As a result, there can be provided the baby pillow on which the baby can have good sleep.

**[0026]** Furthermore, when the baby position holding structure comprises the above pillow, the neck part can be prevented from being bent and the oxygen saturation can be prevented from being lowered.

**[0027]** Preferably, a height of the head positioning part which is opposed to a nose and a mouth of the baby

when the baby turns sideways on the neck supporting part is lower than heights of the nose and the mouth of the baby. Since the height of the head positioning part is set as described above, even when the baby turns sideways, the baby is not choked.

**[0028]** In addition, the pair of head positioning parts may be continued to each other at a top of the head.

**[0029]** Further preferably, the neck supporting part is in the shape of a trapezoid having a long side on the neck side. In addition, it is preferable that a height of the pair of head positioning parts is formed so as to be gradually lowered from the top side of the head toward the neck side. Furthermore, it is preferable that the neck supporting part is formed so as to be gradually lowered from the top side of the head toward the neck side.

**[0030]** Further preferably, the pair of head positioning parts extends to the neck side beyond the neck supporting part to constitute shoulder pads which position shoulders of the baby.

**[0031]** Since the shoulder pad extending from the head positioning part is provided so as to position the shoulder of the baby, the head and the shoulder of the baby can be positioned. As a result, the head and the body of the baby is not likely to be twisted and the airway in the throat is not likely to be blocked.

**[0032]** The baby position holding structure may further comprise a stand wall which is continued from the pair of body supports and surrounds a periphery of the mat so as to surround a lower body of the baby.

**[0033]** A baby pillow according to the present invention comprise a pair of head positioning parts having a first height and supporting both sides of the rear part of the head of the baby from beneath and a neck supporting part having a second height lower than that of the first height and supporting a neck of the baby positioned by the pair of head positioning parts from beneath.

#### BRIEF DESCRIPTION OF DRAWINGS

**[0034]**

Fig. 1 is a perspective view showing a baby pillow according to one embodiment of the present invention;

Fig. 2 is a plan view showing the baby pillow shown in Fig. 1;

Fig. 3 is a sectional view showing the baby pillow taken along line III-III of Fig. 1;

Fig. 4 is a sectional view showing the baby pillow taken along line IV-IV of Fig. 1;

Fig. 5 is a view to explain an effect of the baby pillow according to the present invention;

Fig. 6 is a plan view showing a baby pillow according to another embodiment of the present invention;

Fig. 7 is a plan view showing a baby pillow according to still another embodiment of the present invention;

Fig. 8 is a sectional view showing the baby pillow taken along line VIII-VIII of Fig. 7;

Fig. 9 is a plan view showing a baby pillow according to still another embodiment of the present invention; Fig. 10 is a sectional view showing the baby pillow taken along line X-X of Fig. 9;

Fig. 11 is a plan view showing a baby pillow according to still another embodiment of the present invention;

Fig. 12 is a sectional view showing the baby pillow taken along line XII-XII of Fig. 11;

Fig. 13 is a perspective view showing a baby position holding structure according to one embodiment of the present invention;

Fig. 14 is a transverse sectional view showing a baby position holding tool shown in Fig. 13;

Fig. 15 is a sectional view showing a state in which a body part of a baby is fixed and held by the baby position holding tool;

Fig. 16 is a plan view showing a state in which the baby is laid on the baby position holding tool;

Fig. 17 is a plan view showing a state in which the baby is laid on the baby position holding tool, and both hands are set on a pair of body supports;

Fig. 18 is a graph showing changes in oxygen saturation when the baby is laid on the back;

Fig. 19 is a graph showing changes in oxygen saturation when an angle formed between a seat and a backrest part is 30 degrees;

Fig. 20 is a sectional view showing another example of the baby position holding tool;

Fig. 21 is a sectional view showing a state in which the baby is fixed and held by the baby position holding tool shown in Fig. 20;

Fig. 22 is a sectional view showing still another example of the baby position holding tool;

Fig. 23 is a sectional view showing a state in which the baby is fixed and held by the baby position holding tool shown in Fig. 22;

Fig. 24 is a plan view showing still another example of the baby position holding tool;

Fig. 25 is a sectional view taken along line 25-25 of Fig. 24;

Fig. 26A is a view showing an example in which the baby is put on a donut-shaped pillow;

Fig. 26B is a view showing a state in which a head of the baby is smaller than the donut-shaped baby pillow shown in Fig. 26A and only a neck part is supported by it;

Fig. 26C is a view showing a state in which the head of the baby comes out of the donut-shaped pillow; and

Fig. 27 is a view showing a state in which the neck part and an abdomen part of the baby are bent.

#### BEST MODE FOR CARRYING OUT THE INVENTION

**[0035]** One embodiment of the present invention will be described with reference to the drawings, hereinafter. Fig. 1 is a perspective view showing a baby pillow 10,

Fig. 2 is a plan view thereof, and Figs. 3 and 4 are sectional views showing parts taken along lines III-III and IV-IV, respectively.

**[0036]** Referring to Figs. 1 and 2, the baby pillow 10 comprises an underlay 11, a head positioning part 12 made of a relatively soft cloth on the underlay 11 and raised toward an upper end to form the shape of inverted U, and a neck supporting part 13 provided in the center of the vicinity of a lower end of the baby pillow 10. The neck supporting part 13 is raised and has the shape of a trapezoid in which a lower end side is long.

**[0037]** The inverted U-shaped head positioning part 12 is extended downward beyond the neck supporting part 13 and constitutes a first and a second projections 14a and 14b. In addition, a part surrounded by the head positioning part 12 and the neck supporting part 13 constitutes a recessed part 15. The head positioning part 12, neck supporting part 13 and the recessed part 15 are smoothly connected.

**[0038]** Referring to Fig. 3, the highest part of the neck supporting part 13 is lower than a top side of the head positioning part 12 and the neck supporting part 13 is smoothly lowered to its upper end side and its lower end side. Since the neck supporting part 13 has such tapered shape, when a baby is put on the baby pillow 10, a fat of a part from the neck to the shoulder of the baby who does not have a neck part yet can be supported at this part as will be described below.

**[0039]** Referring to Fig. 4, a height of both sides of the head positioning part 12 is almost the same from its upper end to a little upper part of the neck supporting part 13 and it is gradually lowered from that part to the projections 14. In addition, a height of both sides 12a and 12b of the head positioning part 12 which are opposed to a nose and a mouth of the baby when the baby turns sideways on the neck supporting part 13 is lower than a height of the nose and the mouth of the baby. Thus, even when the baby turns sideways, the baby is not choked.

**[0040]** According to the baby pillow 10 having the above-described configuration, when a head 18 of the baby is put in the recessed part 15 so that its rear part is fitted in (refer to Fig. 3), the head 18 of the baby is positioned by the head positioning part 12. Furthermore, the right and left shoulders are positioned by the first and second projections 14a and 14b. Since the head 18 and the shoulders of the baby can be positioned, the baby body is in no danger of being twisted during sleep unlike it used to be. In addition, since the neck of the baby is supported by the neck supporting part 13, when the baby is put thereon, the neck becomes horizontal, so that it is not likely that the baby feels uneasy because the neck part is lifted, or the airway in the throat is blocked because the neck part is lowered too much like it used to be.

**[0041]** It is preferable that a material constituting the underlay 11 has a density higher than that of materials constituting the head positioning part 12, the neck supporting part 13, and the first and second projections 14a and 14b which are provided on the underlay 11 in order

to keep the height as the baby pillow 10.

**[0042]** Fig. 5 is a graph showing changes in oxygen saturation ( $SpO_2$ : measured value by a pulse oximeter) and pulse rate while the baby sleeps on the baby pillow 10 according to this embodiment. A case (A) where the baby sleeps on the baby pillow 10, a case (B) where the baby sleeps without the baby pillow 10, and a case (C) where the baby sleeps on the baby pillow 10 again are arranged so that they can be compared with each other. The pulse rate is normal in all data.

**[0043]** As can be seen from Fig. 5, when the baby pillow 10 (A) was used, the oxygen saturation was not lowered (around 95) and the baby had a good sleep. Before too long after the baby pillow 10 was taken away (B), it was found that the oxygen saturation was lowered (lowered to about 85). This is because the neck was twisted when the baby rolled over, so that the oxygen saturation was lowered. After that, when the baby pillow 10 is used again (C), the oxygen saturation is raised again (in the vicinity of 95). According to Fig. 5, an effect of the baby pillow 10 can be clearly seen.

**[0044]** Next, another embodiment of the present invention will be described. Fig. 6 is a plan view showing this embodiment of the present invention. According to this embodiment, a baby pillow 20 is incorporated in a baby care instrument represented by a baby carriage.

**[0045]** Referring to Fig. 6, the baby pillow 20 is appropriately incorporated in an inner wall surface of a baby carriage 21. A configuration of this baby pillow is basically the same as that shown in Figs. 1 to 4. Thus, when the baby pillow 20 is adapted to the inner wall surface of the baby care instrument such as the baby carriage or fixed thereto, since the head and shoulders of the baby can be firmly positioned in the baby carriage, the airway in the throat is not blocked during sleep.

**[0046]** In this case, it is necessary to make an underlay 11 of a material whose density is higher than that of a material forming an upper surface of the baby care instrument such as the baby carriage 21 comprising the baby pillow 20, so that the underlay 11 is not affected by hardness of the upper surface of the baby care instrument comprising the baby pillow 20.

**[0047]** Next, still another embodiment of the present invention will be described. Fig. 7 is a plan view showing a baby pillow according to this embodiment of the present invention, and Fig. 8 is a sectional view showing a part taken along line VIII-VIII of Fig. 7. Referring to Figs. 7 and 8, the baby pillow 30 according to this embodiment is different from that according to the above embodiment shown in Figs. 1 to 4 in that a head positioning part 32 is in the shape of a donut, projections are not provided and a neck supporting part 33 is in the shape of a rectangle. Including a structure in which a part surrounded by the head positioning part 32 and the neck supporting part 33 constitutes a recessed part 35, since the parts other than the above differences are basically the same as the above-described embodiment, their description will be omitted.

**[0048]** Since the baby pillow 30 according to this embodiment has the same fundamental configuration as that of the above embodiment basically, the same effect as that of the above embodiment can be provided.

**[0049]** Next, still another embodiment of the present invention will be described. Fig. 9 is a plan view showing this embodiment of the present invention, and Fig. 10 is a sectional view showing a part taken along line X-X of Fig. 9. Referring to Figs. 9 and 10, a baby pillow 40 according to this embodiment is different from that according to the above embodiment in that a head positioning part 42 is divided into right and left head positioning parts 42a and 42b by a groove 46 at a top part. In addition, the head positioning part 42 and a neck supporting part 43 are raised from an underlay 41 in a relatively sharp manner.

**[0050]** Since the parts other than the above differences are basically the same as the above-described embodiment, their description will be omitted. Since the baby pillow 40 according to this embodiment has the essential parts of the above embodiment basically, the same effect as that of the above embodiment can be provided.

**[0051]** Next, still another embodiment of the present invention will be described. Fig. 11 is a plan view showing this embodiment of the present invention, and Fig. 12 is a sectional view showing a part taken along line XII-XII of Fig. 11. Referring to Figs. 11 and 12, a baby pillow 50 according to this embodiment is different from that according to the above embodiment in that the pair of head positioning parts 42a and 42b in the above embodiment are divided into projections 52a and 53a, and projections 52b and 53b, respectively. Thus, since there are provided grooves 56a and 56b, even when the baby turns sideways during sleep, the baby is not choked because parts opposed to the nose and the mouth of the baby when the baby turns sideways do not exist.

**[0052]** Furthermore, the grooves 56a and 56b may be provided from the center of Fig. 11 to a position (shown by dashed lines in Fig. 11) where the nose and the like of the baby do not abut on when the baby turns sideways and may have some height from that position (refer to a part shown by dashed lines in Fig. 12). In this case also, the same effect as the above can be provided.

**[0053]** In addition, including a structure in which a part surrounded by the projections 52a, 53a, 52b and 53b and a neck supporting part 43 constitutes a recessed part 45, the parts other than the differences are the same as that of the above embodiment, their description will be omitted.

**[0054]** Fig. 13 is a perspective view showing a baby position holding tool 60 having a baby position holding structure according to one embodiment of the present invention, and Fig. 14 is a transverse sectional view thereof. Fig. 15 is a sectional view showing a state the baby is put on the baby position holding tool 60. The illustrated baby position holding tool 60 comprises a mat 61 extending from right to left and up and down, and a pair of body supports 62 and 63 positioned on the right

and the left sides of the mat 61 so as to abut on both sides of a body 100 of the baby on the mat. The body supports 62 and 63 include lower parts 62b and 63b which support the rear faces of the sides of the body 100 of the baby, respectively and upper parts 62a and 63a which are positioned on the lower parts 62b and 63b so as to be shifted outward and abut on the sides of the body 100 of the baby, respectively from the side. Referring to Fig. 15, both arms 101 and 102 are put on the upper parts 62a and 63a of the body supports.

**[0055]** The baby position holding tool 60 may be used on a floor, a bed, a baby bed and the like in a room, or on a baby care instrument such as a baby carriage, a child safety seat, a baby chair and the like.

**[0056]** According to the illustrated embodiment, the upper parts 62a and 63a and the lower parts 62b and 63b of the body supports 62 and 63, respectively are columnar bodies having elliptical sections. The upper parts 62a and 63a are connected to the lower parts 62b and 63b, respectively by appropriate connecting means. For example, they may be sewed or detachably connected through a hook and loop fastener.

**[0057]** Since the body supports 62 and 63 abut on both sides of the body of the baby, the upper parts 62a and 63a and the lower parts 62b and 63b are preferably made of a flexible material so that the baby can be softly touched. For example, the upper parts 62a and 63a may be made of a foamed material having a high foaming ratio, and the lower parts 62b and 63b may be made of a foamed material having a foaming ratio lower than that of the upper parts.

**[0058]** As shown in Fig. 15, the lower parts 62b and 63b of the body supports 62 and 63, respectively are pressed by the rear faces of the sides of the body 100 of the baby and expand transversely so as to fill gaps between the back of the baby and the mat 61. In addition, as the lower parts 62b and 63b are pressed by the weight of the baby and deformed, the upper parts 62a and 63a are moved inward to abut on both sides of the body 100 from the side. Therefore, according to the illustrated embodiment, the position of the body of the baby can be firmly and stably held. Thus, the abdomen of the baby is prevented from being bent during sleep and the oxygen saturation can be prevented from being lowered.

**[0059]** The body supports 62 and 63 may be completely fixed to the mat 61 or may be detachably mounted on it through a hook and loop fastener. When the body support is detachable, the distance between the pair of body supports or their positional relation can be adjusted depending on a figure or a body size of the baby. In addition, it is not needless to say that even in the case the body supports are mounted on the mat so as not to be detachable, the distance or the positional relation of the pair of body supports can be adjusted.

**[0060]** The illustrated baby position holding tool 60 comprises a pillow 10 mounted on an upper part of the mat 61 so that the head of the baby on the mat 61 can be supported from beneath. Since the pillow 10 is the

same as that shown in Figs. 1 to 4, its description will be omitted. Needless to say, instead of the pillow 10 illustrated in Figs. 1 to 4, the pillow 20 shown in Fig. 6, the pillow 30 shown in Fig. 7, the pillow 40 shown in Fig. 9, and the pillow 50 shown in Fig. 11 may be used.

**[0061]** The pillow 10 may be completely fixed to an upper part of the mat 61 or may be detachably mounted thereon through a hook and loop fastener. Preferably, the position of the pillow 10 can be adjusted depending on the size of the body of the baby.

**[0062]** Since the baby position holding tool 60 comprises the above pillow 10, the neck part of the baby is prevented from being bent, so that the oxygen saturation is prevented from being lowered.

**[0063]** Figs. 16 and 17 show a state in which the baby is lay on the back on the baby position holding tool 60. According to the state shown in Fig. 16, since the baby raises both hands toward the head side, the pair of body supports 62 and 63 are positioned under the arms. According to the state shown in Fig. 17, since the baby puts both hands down, the pair of body supports 62 and 63 support both arms of the baby from beneath. Thus, according to the illustrated embodiment, since the pair of body supports 62 and 63 do not hinder the movement of both arms of the baby, the baby does not feel uneasy.

**[0064]** Fig. 18 is a graph showing changes in oxygen saturation in a case (solid line) where the baby position holding tool 60 is used and in a case (dotted line) where the baby position holding tool 60 is not used when the baby is laid on the back who is two months old. In the case the baby position holding tool 60 was not used, it was found that the oxygen saturation was largely lowered when the baby was moved. Meanwhile, in the case the baby position holding tool 60 was used, it was found that the oxygen saturation was not lowered.

**[0065]** Fig. 19 is a graph showing changes in oxygen saturation in a case (solid line) where the baby position holding tool 60 is used and in a case (dotted line) where the baby position holding tool 60 is not used when the baby is laid on the back who is two months old in a state in which a backrest part is raised so as to form an inclination angle of 30 degrees with respect to a seat. In the case the baby position holding tool 60 was not used, it was found that the oxygen saturation was lowered often. This is because it is thought that the neck part and the abdomen part of the baby are likely to be bent since the backrest part is raised. Meanwhile, in the case the baby position holding tool 60 was used, it was found that the oxygen saturation was not lowered.

**[0066]** When the mat 61 is made of a material having a certain degree of shape retaining property, the baby put on the baby position holding tool 60 can be easily clutched together with the baby position holding tool. Therefore, for example, the baby can be easily taken out of the seat of the baby care instrument such as the baby carriage, the child safety seat and the like or put on the seat.

**[0067]** Figs. 20 and 21 show another example of the

baby position holding tool. An illustrated baby position holding tool 70 comprises a mat 71, a pair of body supports 72 and 73, and a belt 74. Like the above embodiments, the body supports 72 and 73 include upper parts 72a and 73a, and lower parts 72b and 73b, respectively. Both ends of the belt 74 pass through parts between the upper parts 72a and 73a and the lower parts 72b and 73b of the body supports 72 and 73, respectively and they are connected to both side walls 75 which forms a seat. In a state the baby is not laid on the baby position holding tool 70, the central part of the belt 74 is positioned above the mat 71.

**[0068]** As shown in Fig. 21, when the baby is laid on the baby position holding tool 70, since the central part of the belt 74 is pressed downward by the body 100 of the baby, both ends of the belt 74 moves the upper parts 72a and 73a of the body supports 72 and 73 inward, respectively.

**[0069]** Figs. 22 and 23 show still another example of the baby position holding tool. An illustrated baby position holding tool 80 comprises a mat 81, and a pair of body supports 82 and 83. The body supports 82 and 83 include lower parts 82b and 83b which support the rear faces of the sides of the body of the baby, respectively and upper parts 82a and 83a which are positioned on the lower parts so as to be shifted outward and abut on the sides of the body 100 of the baby from the side, respectively. As shown in the drawings, plate-shaped rigid members 84 and 85 which are bent downward are housed in the body supports 82 and 83, respectively. When the baby is not laid on the baby position holding tool 80, inner ends of the rigid members 84 and 85 are largely deviated upward from the mat 81.

**[0070]** As shown in Fig. 23, when the baby is laid on the baby position holding tool 80, since the inner ends of the rigid members 84 and 85 are pressed downward, the rigid members 84 and 85 are turned inward as shown by arrows A in Fig. 23 and move the upper parts 82a and 83a inward.

**[0071]** Figs. 24 and 25 show still another example of the baby position holding tool. An illustrated baby position holding tool 110 comprises a mat 111, a pair of body supports 112 and 113, and a stand wall 114 continued from the pair of body supports and surrounding a periphery of the mat 111. The stand wall 114 has a predetermined height to surround a lower body of the baby. A notch 115 is provided to pass a crotch belt mounted on the baby care instrument.

**[0072]** As shown in Fig. 25, the body supports 112 and 113 include lower parts 112b and 113b which support rear faces of the sides of the body of the baby from behind, respectively and upper parts 112a and 113a which are positioned on the lower parts so as to be shifted outward and abut on the sides of the body of the baby from the side, respectively. According to the illustrated embodiment, a cloth forming the mat 111 covers the lower parts 112b and 113b and the upper parts 112a and 113a.

**[0073]** Although the various embodiments of the

present invention have been described with reference to the drawings, the present invention is not limited to the above embodiments. Various kinds of modifications and variations can be added to the illustrated embodiments within the same or equivalent scope of the present invention.

## INDUSTRIAL APPLICABILITY

**[0074]** The present invention can be advantageously applied to a baby position holding structure and a baby pillow which can appropriately hold a position of a baby.

## Claims

1. A baby position holding structure comprising:

a mat extending from right to left and up and down; and  
a pair of body supports positioned on right and left sides of said mat so as to abut on both sides of a body of a baby laid on said mat, wherein said each body support includes a lower part supporting a rear face of the side of the body of the baby from beneath, and an upper part positioned on the lower part so as to be shifted outward and abut on the side of the body of the baby from the side.

2. The baby position holding structure according to claim 1, wherein  
said upper part is made of a foamed material having a high forming ratio, and  
said lower part is made of a foamed material having a forming ratio lower than that of said upper part.

3. The baby position holding structure according to claim 1 or 2, wherein said upper part is constituted so as to be moved inward as said lower part is pressed by a weight of the baby.

4. The baby position holding structure according to any one of claims 1 to 3, wherein  
said each body support is detachably mounted on said mat.

5. The baby position holding structure according to any one of claims 1 to 4, comprising a pillow provided at an upper part of said mat so as to support the head of the baby laid on said mat from beneath.

6. The baby position holding structure according to claim 5, wherein said pillow is detachably mounted on said mat.

7. The baby position holding structure according to claim 5 or 6, wherein

said pillow comprises:

a pair of head positioning parts having a first height and supporting both sides of a rear part of the head of the baby from beneath; and  
a neck supporting part having a second height lower than that of said first height and supporting a neck of the baby positioned by said pair of head positioning parts from beneath.

8. The baby position holding structure according to claim 7, wherein a height of said head positioning part which is opposed to a nose and a mouth of the baby when the baby turns sideways on said neck supporting part is lower than heights of the nose and the mouth of the baby.
9. The baby position holding structure according to claim 7 or 8, wherein said pair of head positioning parts is continued to each other at a top of the head.
10. The baby position holding structure according to any one of claims 7 to 9, wherein said neck supporting part is in the shape of a trapezoid having a long side on the neck side.
11. The baby position holding structure according to any one of claims 7 to 10, wherein a height of said pair of head positioning parts is formed so as to be gradually lowered from the top side of the head toward the neck side.
12. The baby position holding structure according to any one of claims 7 to 11, wherein said neck supporting part is formed so as to be gradually lowered from the top side of the head toward the neck side.
13. The baby position holding structure according to any one of claims 7 to 12, wherein said pair of head positioning parts extends to the neck side beyond said neck supporting part to constitute shoulder pads which position shoulders of the baby.
14. The baby position holding structure according to any one of claims 1 to 13, further comprising a stand wall which is continued from said pair of body supports and surrounds a periphery of said mat so as to surround a lower body of the baby.

15. A baby pillow comprising:

a pair of head positioning parts having a first height and supporting both sides of a rear part of the head of the baby from beneath; and  
a neck supporting part having a second height lower than that of said first height and supporting a neck of the baby positioned by said pair of head positioning parts from beneath.

16. The baby pillow according to claim 15, wherein a height of said head positioning part which is opposed to a nose and a mouth of the baby when the baby turns sideways on said neck supporting part is lower than heights of the nose and the mouth of the baby.
17. The baby pillow according to claim 15 or 16, wherein said pair of head positioning parts is continued to each other at a top of the head.
18. The baby pillow according to any one of claims 15 to 17, wherein said neck supporting part is in the shape of a trapezoid having a long side on the neck side.
19. The baby pillow according to any one of claims 15 to 18, wherein a height of said pair of head positioning parts is formed so as to be gradually lowered from the top side of the head toward the neck side.
20. The baby pillow according to any one of claims 15 to 19, wherein said neck supporting part is formed so as to be gradually lowered from the top side of the head toward the neck side.
21. The baby pillow according to any one of claims 15 to 20, wherein said pair of head positioning parts extends to the neck side beyond said neck supporting part to constitute shoulder pads which position shoulders of the baby.



FIG. 1

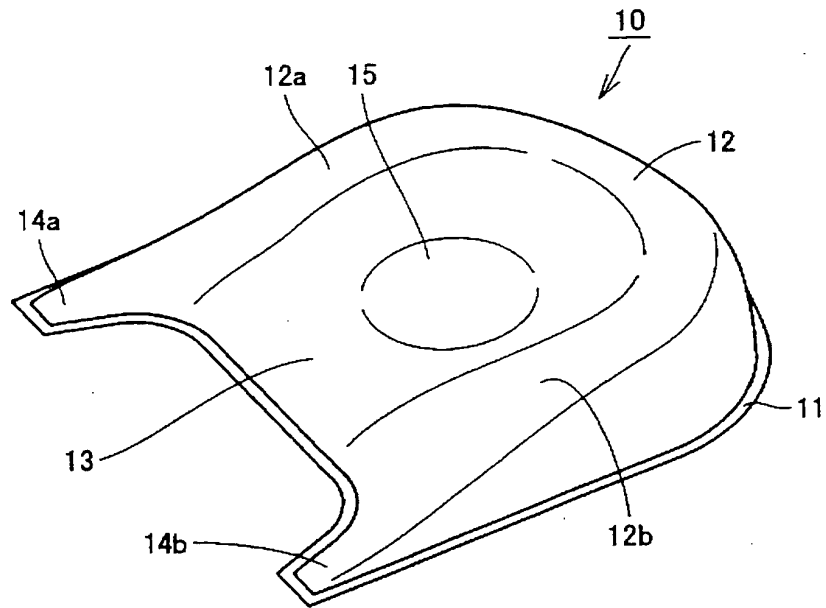


FIG. 2

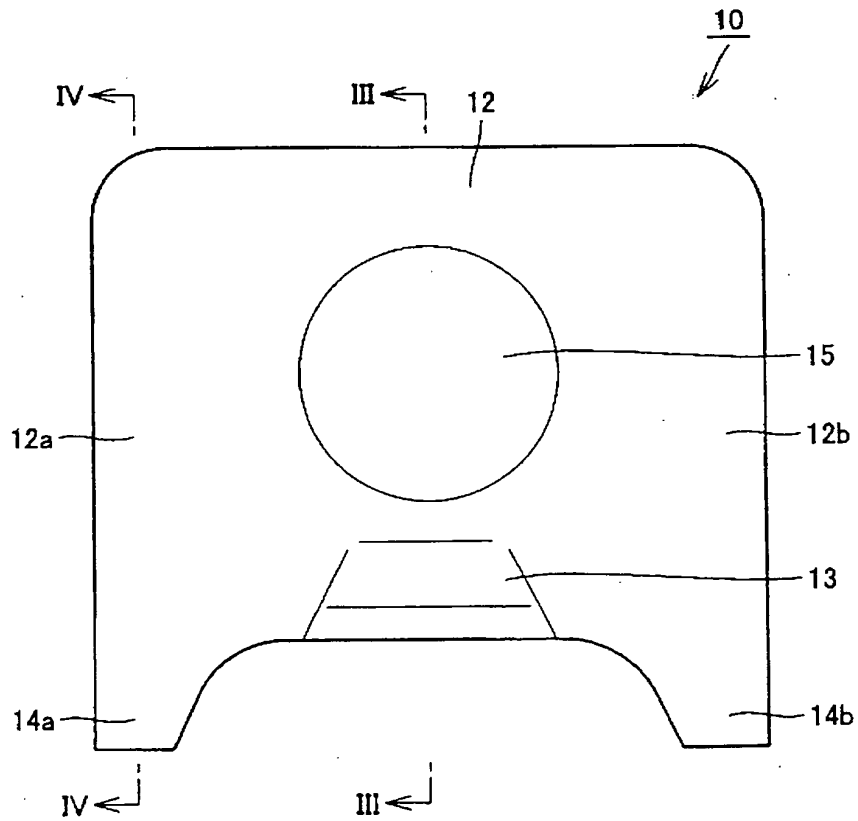


FIG. 3

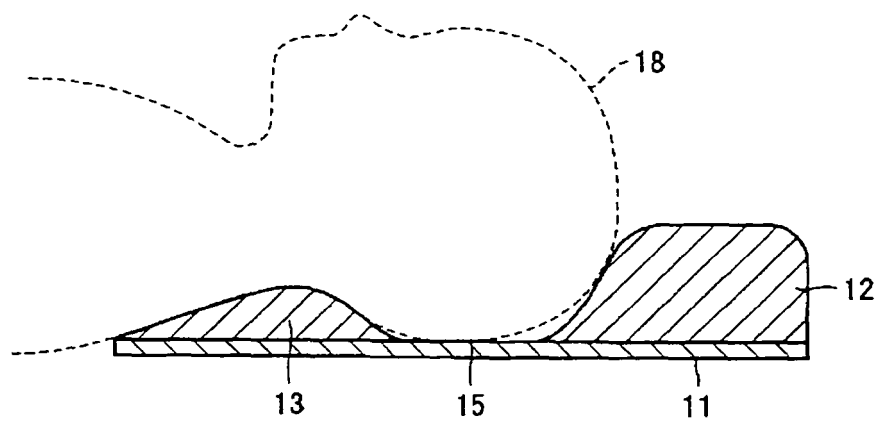


FIG. 4

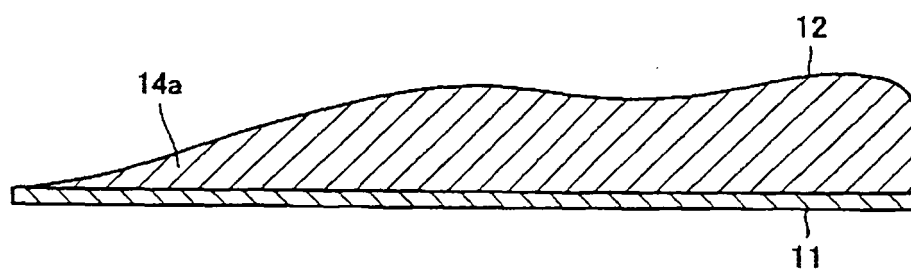


FIG. 5

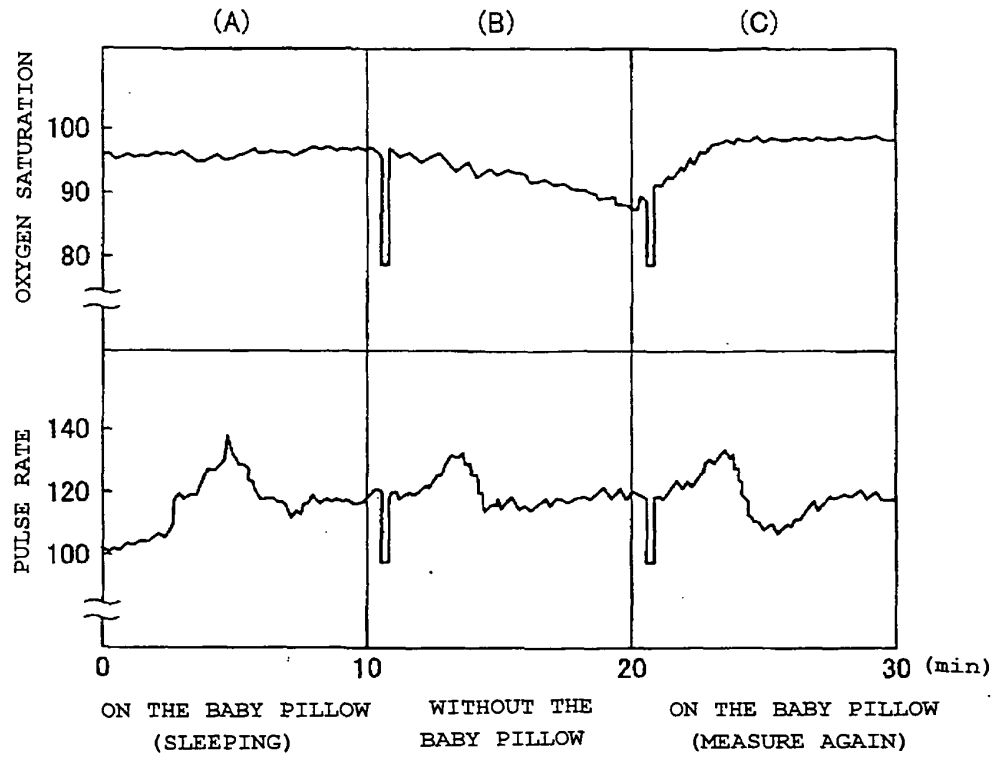


FIG. 6

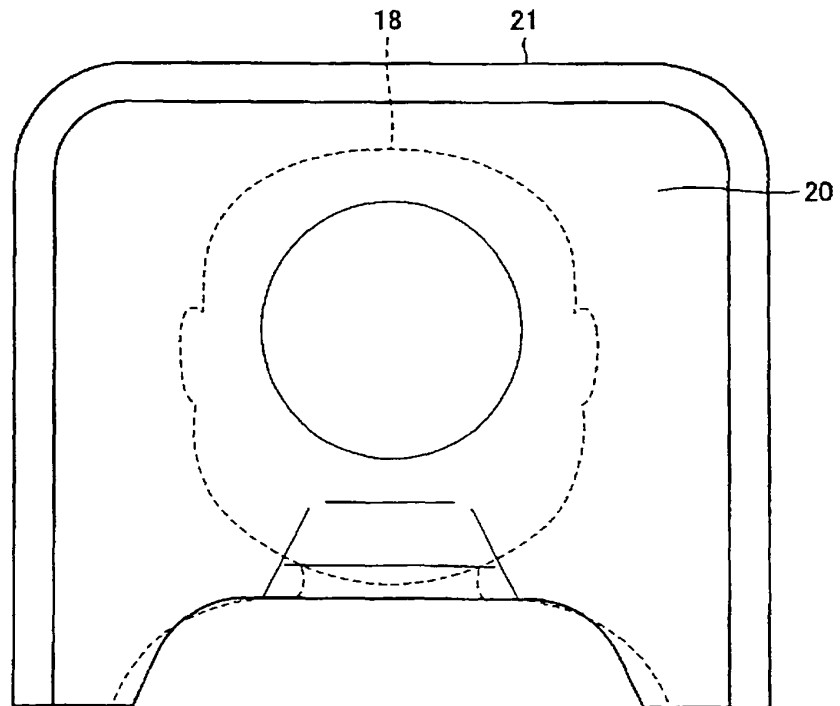


FIG. 7

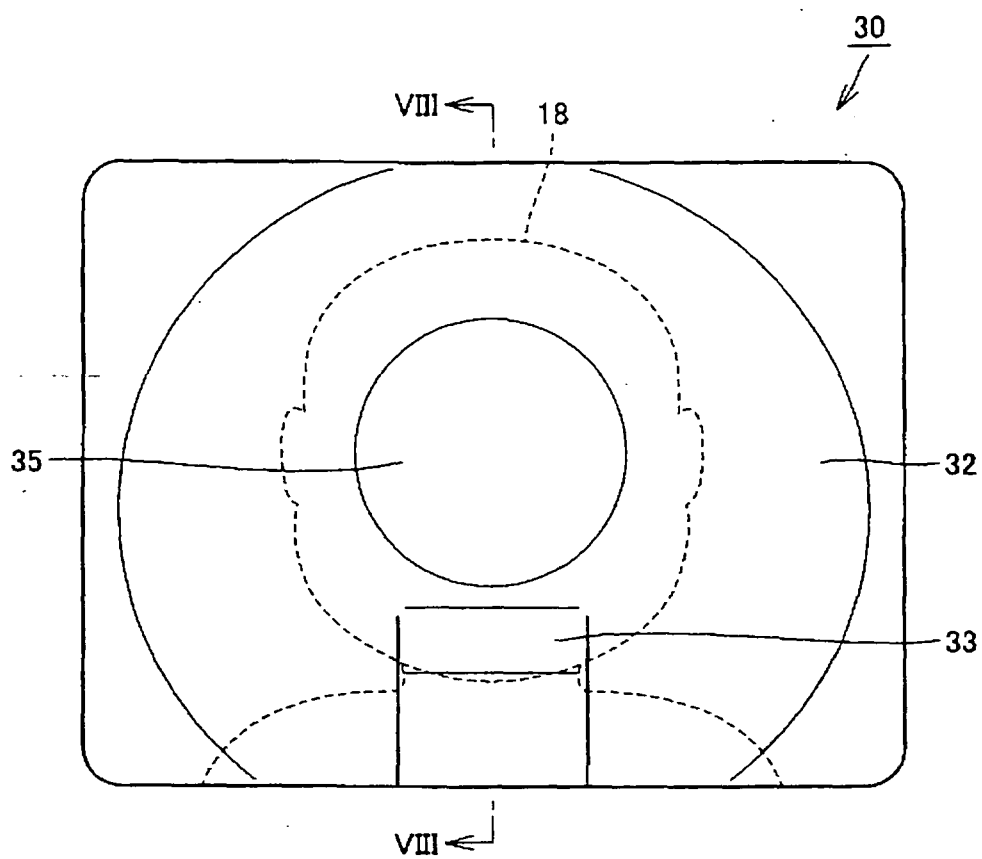


FIG. 8

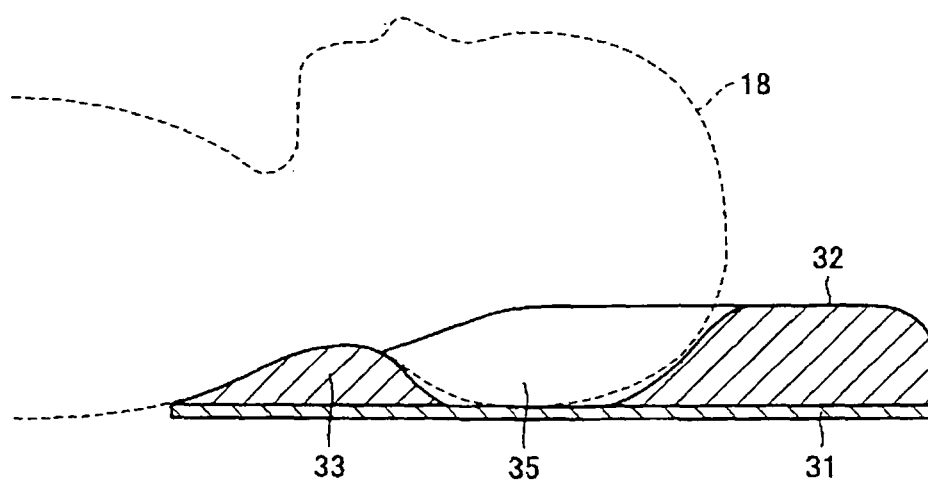


FIG. 9

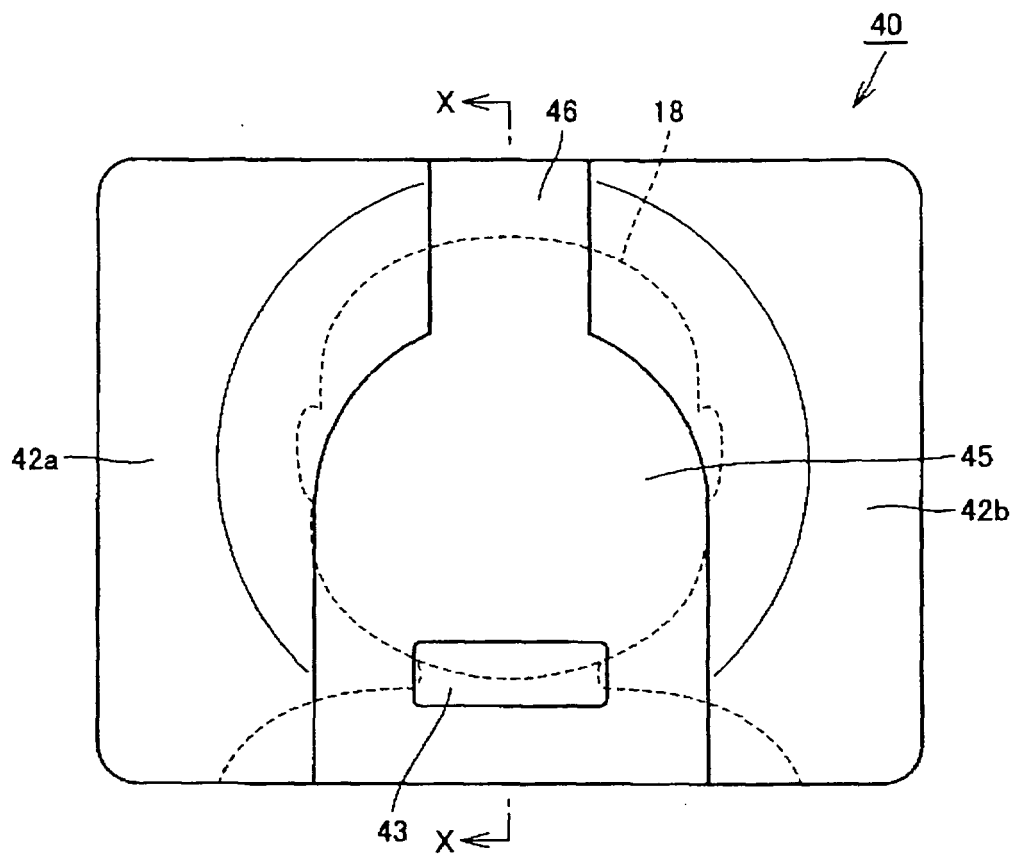


FIG. 10

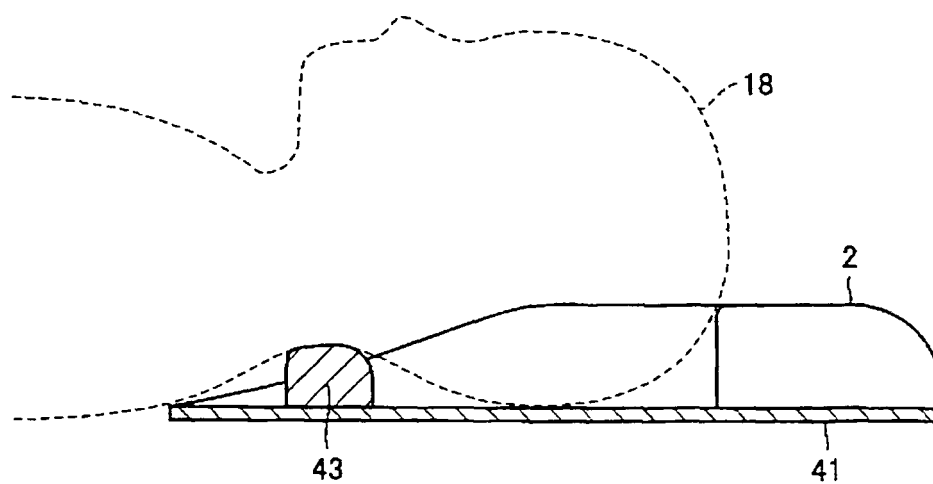


FIG. 11

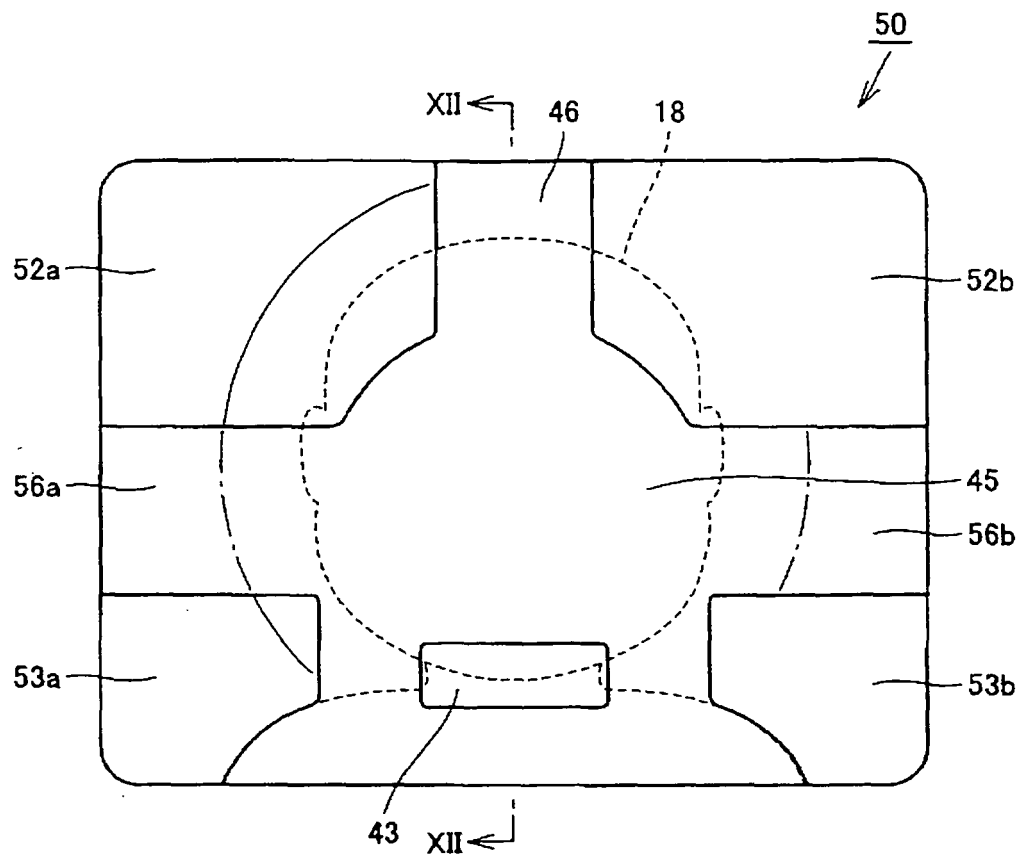


FIG. 12

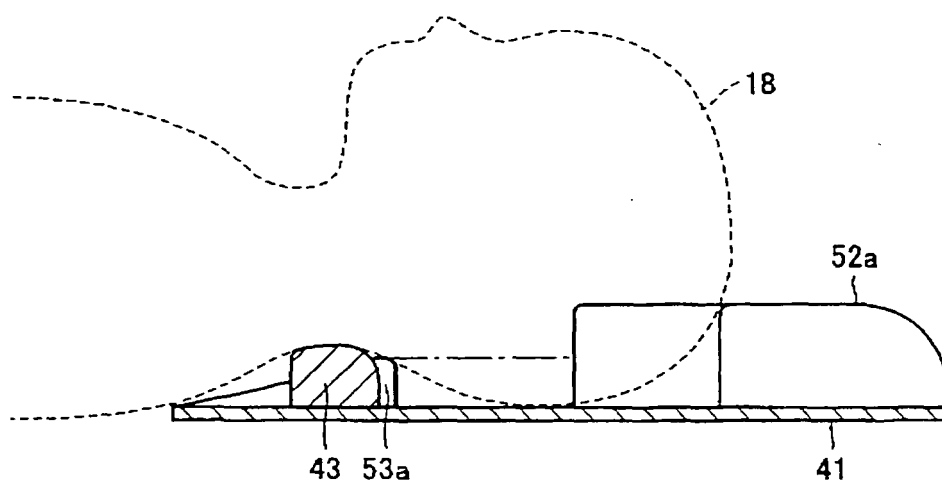


FIG. 13

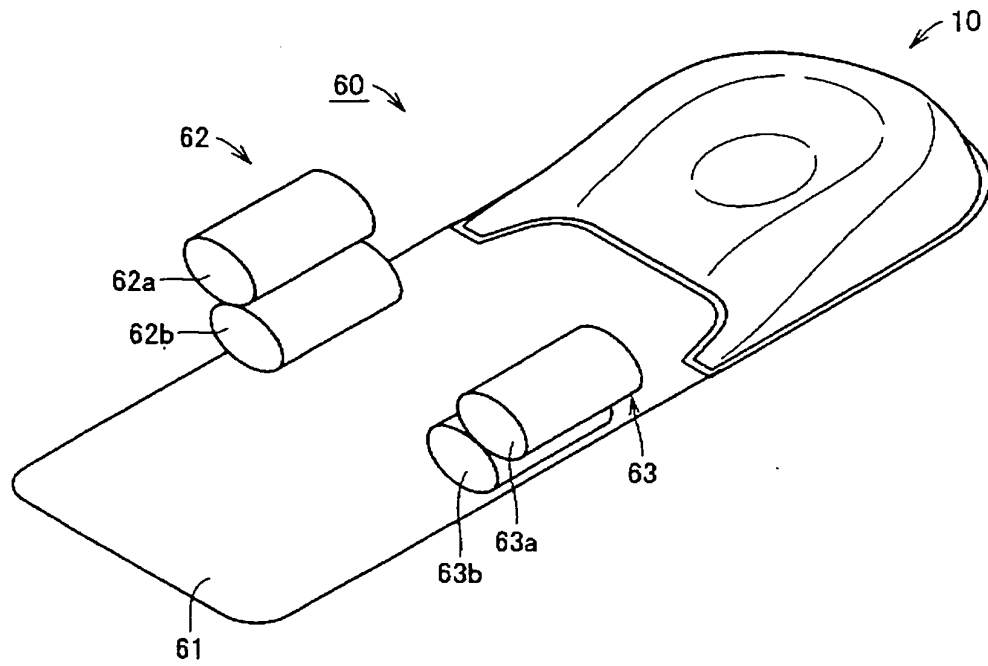


FIG. 14

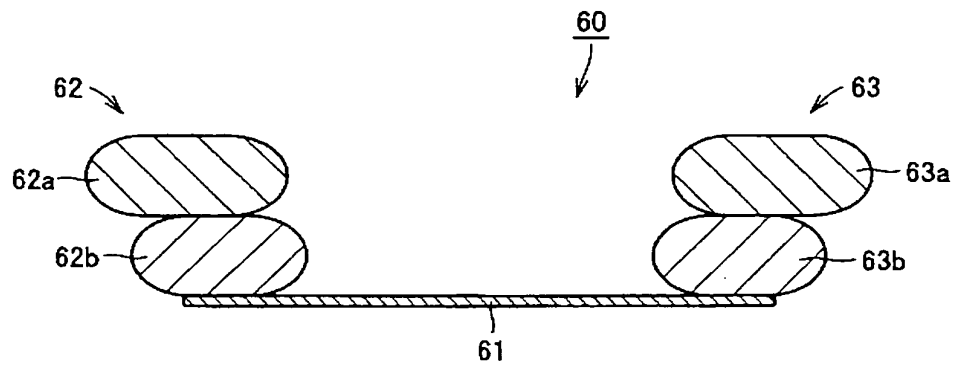


FIG. 15

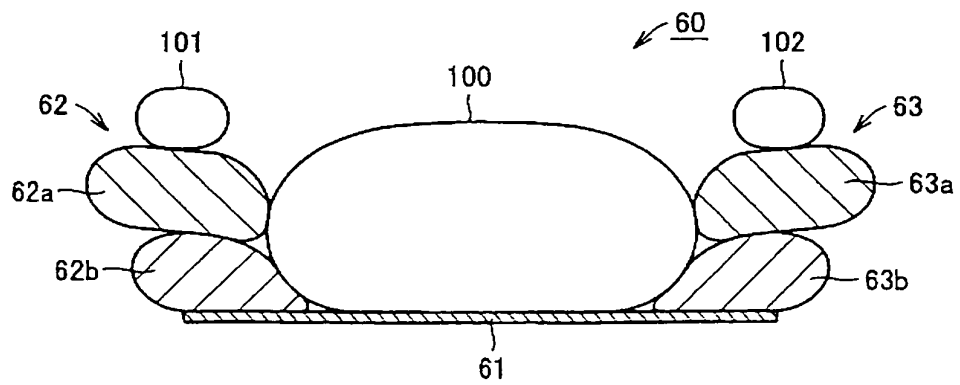


FIG. 16

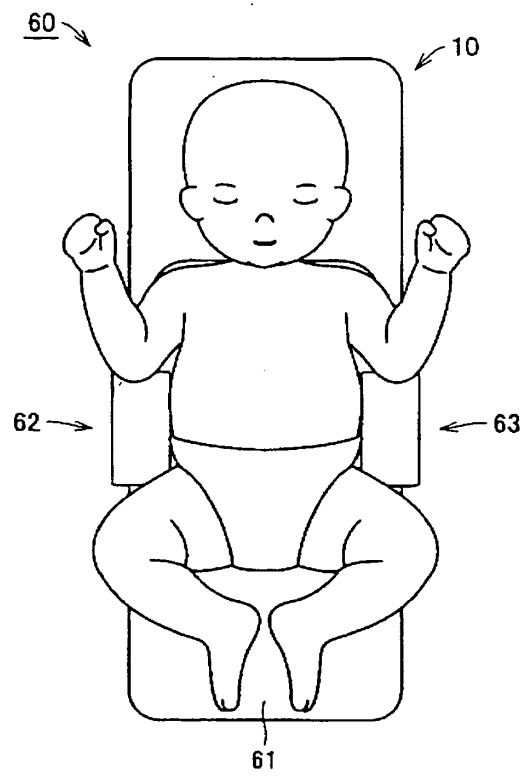


FIG. 17

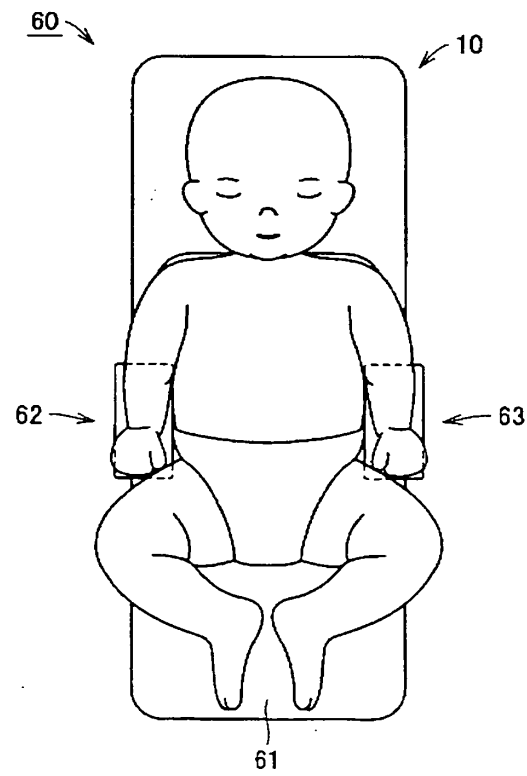




FIG. 18

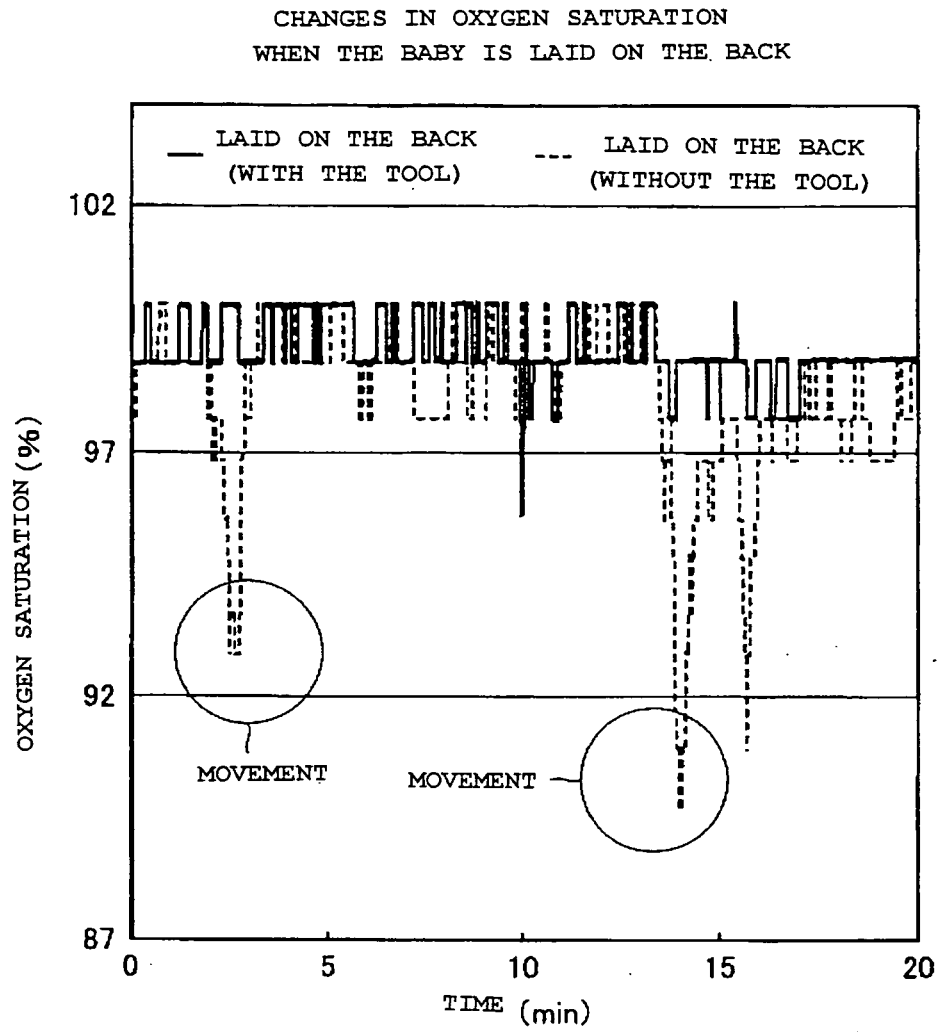


FIG. 19

CHANGES IN OXYGEN SATURATION WHEN AN ANGLE FORMED  
BETWEEN A SEAT AND A BACKREST PART IS 30 DEGREES

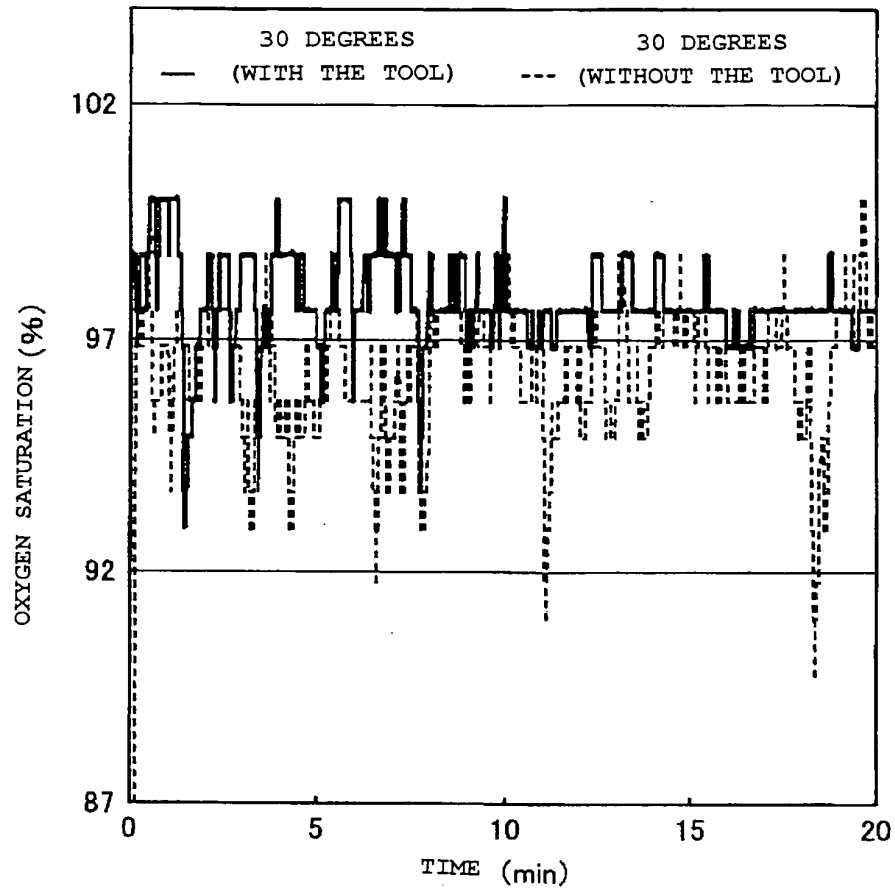


FIG. 20

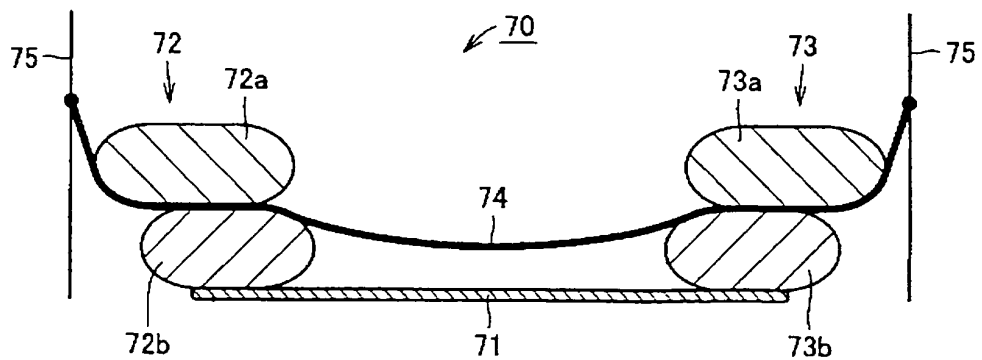


FIG. 21

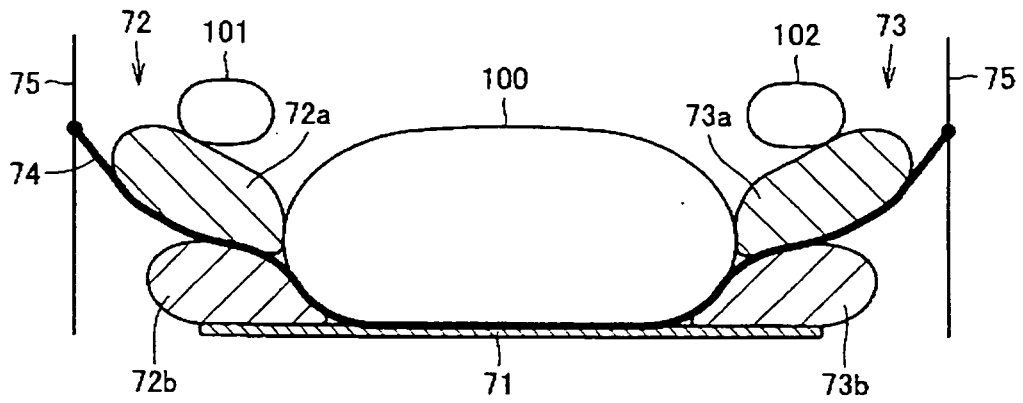


FIG. 22

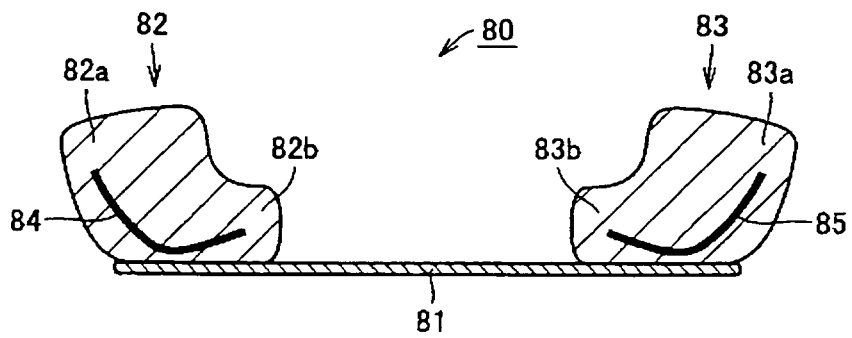


FIG. 23

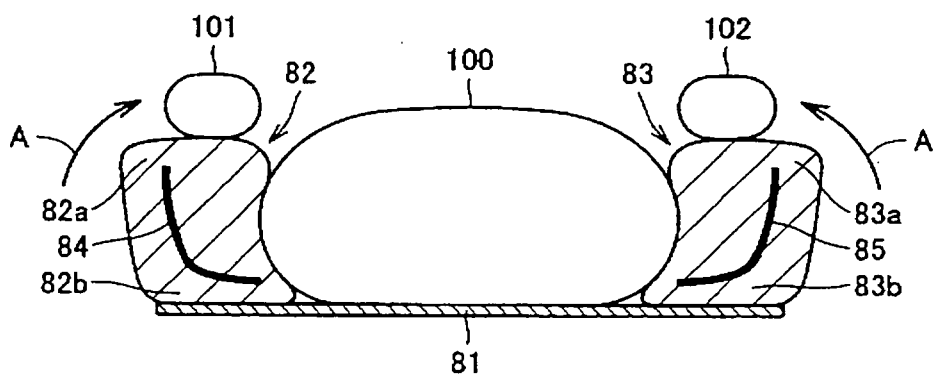


FIG. 24

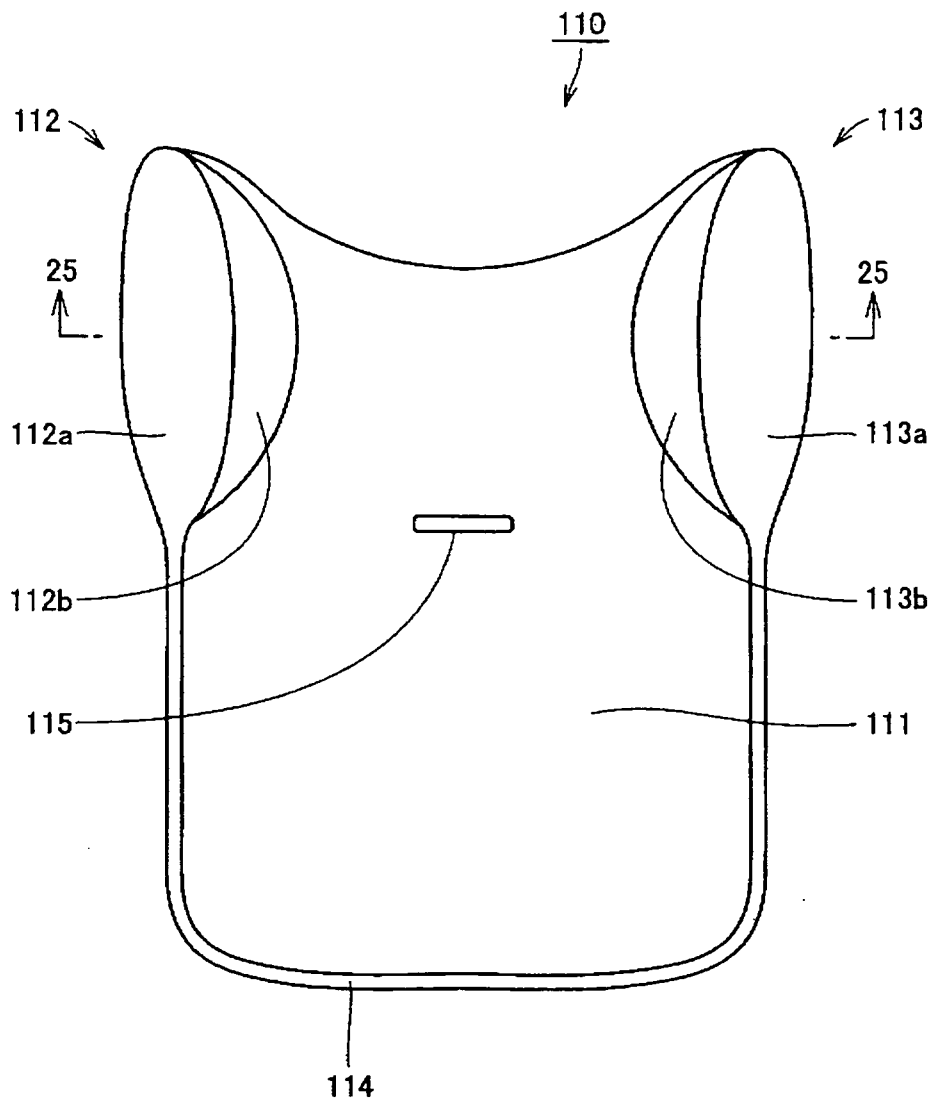


FIG. 25

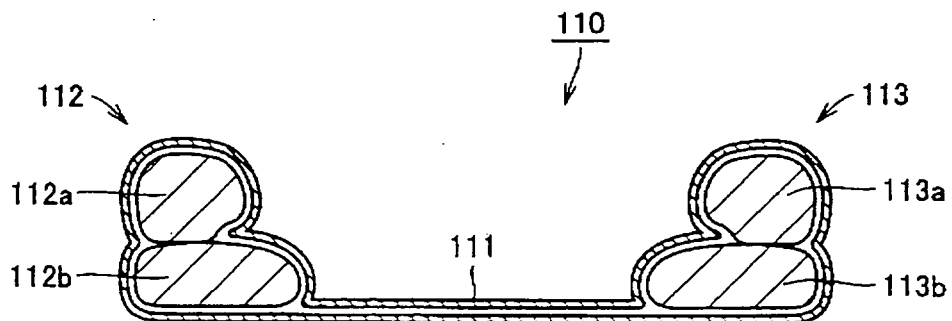


FIG. 26A

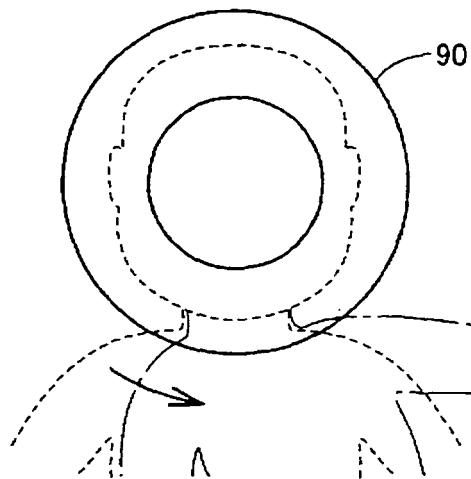


FIG. 26B

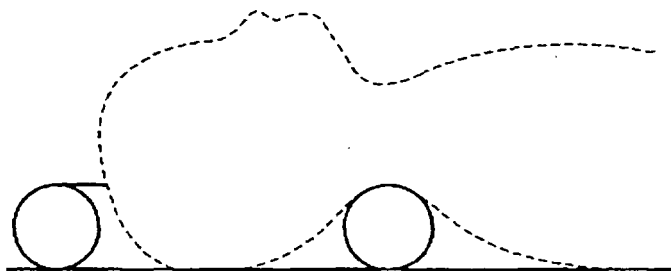


FIG. 26C

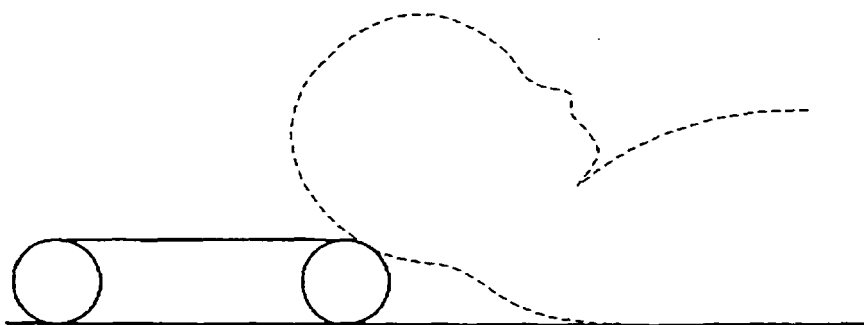


FIG. 27



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/012197

| <b>A. CLASSIFICATION OF SUBJECT MATTER</b><br>Int.Cl <sup>7</sup> A47D7/00, A47G9/10<br><br>According to International Patent Classification (IPC) or to both national classification and IPC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                |                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>B. FIELDS SEARCHED</b><br>Minimum documentation searched (classification system followed by classification symbols)<br>Int.Cl <sup>7</sup> A47D7/00-7/04, A47G9/10<br><br>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched<br>Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2004<br>Kokai Jitsuyo Shinan Koho 1971-2004 Toroku Jitsuyo Shinan Koho 1994-2004<br><br>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                |                                                                                    |
| <b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                |                                                                                    |
| Category*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Citation of document, with indication, where appropriate, of the relevant passages                                                             | Relevant to claim No.                                                              |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | US 4383713 A (Stewart A. Roston),<br>17 May, 1983 (17.05.83),<br>Column 2, line 50 to column 4, line 49;<br>Figs. 1 to 6<br>(Family: none)     | 1-21                                                                               |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | US 3924282 A (Helen Inez Bond),<br>09 December, 1975 (09.12.75),<br>Column 2, line 30 to column 4, line 44; Fig. 1<br>(Family: none)           | 1-14                                                                               |
| X<br>Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | JP 48-019774 Y1 (Yoshifusa KUSHIDA),<br>06 June, 1973 (06.06.73),<br>Column 1, line 15 to column 2, line 15;<br>Figs. 1 to 4<br>(Family: none) | 15-20<br>21                                                                        |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                |                                                                                    |
| * Special categories of cited documents:<br>"A" document defining the general state of the art which is not considered to be of particular relevance<br>"E" earlier application or patent but published on or after the international filing date<br>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)<br>"O" document referring to an oral disclosure, use, exhibition or other means<br>"P" document published prior to the international filing date but later than the priority date claimed<br>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention<br>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone<br>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art<br>"&" document member of the same patent family |                                                                                                                                                |                                                                                    |
| Date of the actual completion of the international search<br>16 November, 2004 (16.11.04)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                | Date of mailing of the international search report<br>07 December, 2004 (07.12.04) |
| Name and mailing address of the ISA/<br>Japanese Patent Office                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                | Authorized officer                                                                 |
| Facsimile No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                | Telephone No.                                                                      |

Form PCT/ISA/210 (second sheet) (January 2004)

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/012197

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                                                              | Relevant to claim No. |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Y<br>A    | Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 118259/1973 (Laid-open No. 61914/1975) (Tokai Kogyo Co., Ltd.), 06 June, 1975 (06.06.75), Page 2, line 8 to page 4, line 10; Fig. 2 (Family: none) | 21<br>15-20           |

Form PCT/ISA/210 (continuation of second sheet) (January 2004)



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/012197

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

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

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

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

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

A special technical feature of inventions in Claims 1-14 relates to "a posture holding structure for an infant comprising a mat extending in the longitudinal and lateral directions and a pair of body supports positioned on the right and left side parts of the mat so as to abut on both side parts of the body of the infant put on the mat and the body supports further comprise a lower layer part supporting the side-rear faces of the infant from the underside and an upper layer part deviated to the outer sides on the lower layer part and abutting on the body side-parts of the infant from the sides".  
(continued to extra sheet)

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

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/012197

Continuation of Box No. III of continuation of first sheet (2)

A special technical feature of inventions in Claims 15-21 relates to "a pillow for an infant comprising a pair of head part positioning parts having a first height and supporting both side parts of the rear head part of the infant and a cervical vertebrae supporting part having a second height lower than the first height and supporting, from the underside, the neck of the infant positioned by the pair of head part positioning parts.

Since the inventions in Claims 1-14 and inventions in Claims 15-21 are not so technically related as to involve one or more of the same or corresponding special technical features, they are not considered to be so linked as to form a single general inventive concept.

Accordingly, the inventions in Claims 1-14 and inventions in Claims 15-21 do not fulfill the requirement of unity of invention.