Title: METHOD OF MANUFACTURING A BELT OR A SIDE PANEL OF AN ABSORBENT ARTICLE, LAMINATE AND ABSORBING ARTICLE

Abstract: The present invention relates to a method of manufacturing a belt (70) or a side panel of an absorbent article, the method comprising the steps of feeding a web of material (1) in the machine direction (MD) and cutting the web of material along the machine direction into at least a first web portion (10) and a second web portion (12). The invention furthermore relates to producing a laminate (7) by feeding an elastic web material (3) along the machine direction and joining it with the first web portion and the second web portion; and cutting individual belts (70,90) or side panels from the laminate along the cross machine direction (CD).
Method of manufacturing a belt or a side panel of an absorbent article, laminate and absorbing article

1. TECHNICAL FIELD

The present invention relates to the field of absorbent articles, in particular to baby diapers or adult incontinence products. More specifically, the invention relates to belts or side panels of these absorbent articles, which serve to fasten the diapers or incontinence products to a wearer.

Absorbent articles of this kind usually comprise an absorbent structure including a back sheet, a top sheet and an absorbent core situated there between. The top sheet is intended to be directed towards the user when the absorbent article is worn. To fasten the absorbent articles around the waist of a wearer, a fastening system is provided on the absorbent structure, typically in the form of a belt system or in the form of side panels. Conventionally, the belts or side panels extend laterally from the absorbent structure such that they can be connected to one another, or to a landing zone on the absorbent structure, in order to fasten the absorbent article to the wearer.

It is desired that the belts or side panels of the absorbent articles provide, on the one hand, a comfortable fit to the wearer, in particular when it comes to wearing adult incontinence products, in particular by bedridden people, but, on the other hand, provide a secure and tight fit to accommodate for different activity levels of the wearer. Accordingly, different concepts of providing the belts or side panels for absorbent articles have been proposed.
2. BACKGROUND OF THE INVENTION

Absorbent articles, in particular adult incontinence products, are worn by the respective wearer typically over a considerable period and on a day-to-day basis. Accordingly, a comfortable fit of the absorbent article is crucial in order to increase the well-being of the wearer. In the case of adult incontinence products, absorbent articles that are worn around the lower part of the trunk are usually used by bedridden people, in particular elderly people. Depending on their mental state and activity level, different types of incontinence products are usually used to accommodate for the wearer's specific needs. Incontinence products that are applied to bedridden people are usually applied to the wearer by nursing staff or other caretakers.

Accordingly, a balance has to be found between a tight fit of the incontinence product in order to reduce the occurrence of leaks or shifting of the absorbent article due to movements of the wearer, the actual wearing comfort in order to increase the well-being of the wearer of the product, and a good applicability to facilitate convenient, quick and trouble-free application of the incontinence product, in particular by nursing staff or other caretakers. The belts or side panels play an important role in this respect as they are the elements actually actuated and/or manipulated by nursing staff or caretakers. Accordingly, it is important to improve reliability and manufacturing efficiency and product quality in this respect.

In order to accommodate for the different positions of a wearer during the day-to-day use of incontinence products, JP 09-154884 A proposes a disposable diaper having, included in a side panel, an expandable part at the base ends of the respective side panels. The expandable part serves to
accommodate different wearing positions in order to increase
the tight fit of the diaper.

EP 1 269 949 A2 relates to a method of making a winged
absorbent article. According to this method, a web of wing-
making material is fed together with the chassis of the
absorbent article and folded wing portions are severed from
the web of wing-making material and are attached to the
chassis.

EP 1 004 285 A1 relates to a process for applying discrete
web portions to a receiving web. According to this
disclosure, a web is fed into a web transfer apparatus at a
certain speed, and the web is then cut into web portions and
applied to a receiving web.

3. SUMMARY OF THE DISCLOSURE

It is an object of the present invention to provide a method
of manufacturing a belt or a side panel of an absorbent
article which improves the efficiency of the manufacture as
well as the quality of the resulting belt or side panel as
well as of the resulting absorbent article. It is a further
object of the present invention to provide a laminate for an
absorbent article, in particular for a belt or a side panel
and an absorbent article with such a belt or side panel with
improved quality and application characteristics.

These objects are achieved by a method of manufacturing a
belt or a side panel according to claim 1 and claim 26 as
well as by a laminate for an absorbent article according to
claim 28 and by an absorbent article according to claim 30.

In this disclosure, the term "belt" is understood to mean an
elongate structure that is used to fasten the absorbent
article to a wearer. The belt is situated to be joined
together around the waist of the wearer. Typically, the belt
is fixedly attached to the absorbent article in a front portion or a rear portion and can be attached to the respective other of the front and rear portion of the absorbent article in order to fasten the absorbent article to the wearer. In order to attach the belt to the absorbent article, the rear part, or alternatively the front part, of the belt exhibits fixing devices that can be attached to the absorbent article or, in an alternative, to another belt. In the arrangement of the absorbent article fastened to the wearer, the belts form a part of the waist part of absorbent article. When putting on a belt diaper, the belt is fixed, in a first stage, around the waist of the wearer. The free transverse edge of the absorbent part of the diaper is then passed between the wearer's legs and is attached to the side of the belt facing away from the wearer. An example of an absorbent article in the form of a belted diaper, i.e. a diaper having a belt as a fastening structure, is shown in WO 2006/065177 A1.

In this disclosure, the term "side panel" is understood to relate to a part of an absorbent article that is situated on the side of the absorbent article when the absorbent article is worn, constituting a substantial portion of a pants-like absorbent article. Typically, side panels are re-sealable such that the pants-like absorbent article can either be put on or taken off in the same manner as regular pants, or, in an alternative, can be put on or taken off in the manner as conventional diapers. The side panel is typically directly attached to the absorbent portion of the absorbent article. Examples of diapers with side panels are shown in WO 03/082168 A1 or WO 03/094815 A1.

In other words, belts and side panels differ, inter alia, with respect to their dimensions. Belts have a rather elongate and usually rectangular configuration and have a length of typically half the circumference of the waist of the target wearer. Side panels have a somewhat complex shape,
accommodating sections of a leg hole along one of their edges and constituting a waist portion on another edge. The length of the side panels in the circumferential direction extends typically only between front part and rear part of the footprint of a top sheet and/or bottom sheet of the absorbent article and typically extends around one fourth of the circumference of the waist of the wearer. In the lateral direction, belts typically have a considerably smaller dimension than side panels.

Accordingly, the method of manufacturing a belt or a side panel of an absorbent article comprises the steps of feeding a web of material in the machine direction and cutting the web of material along the machine direction into at least a first web portion and a second web portion. Then, a laminate is produced by feeding an elastic web material along the machine direction and joining it with the first web portion and the second web portion. Then individual belts or side panels are cut from the laminate along the cross machine direction.

By the provision of a single web of material in the machine direction only, which is also the web of material that provides the main section of the belt or the side panel, and the subsequent cutting step of the web of material along the machine direction, a very precise feeding and manufacturing of the belt or side panel is enabled by the method. In particular, as the web of material has a constant width, the resulting belt or side panel also has a constant width, and the quality of the sections of the belt, made up from the web of material, have a constant quality, as they are made up from the same material.

As a result of the step of producing a laminate by reconnecting the two previously cut first and second web portions, the resulting laminate receives a very precise layout. In particular, as the first web portion and the
second web portion stem from a single web of material, they can easily be aligned in a parallel manner. Specifically, the web handling is improved as only a single web of material has to be fed and aligned in the machine.

In a preferred embodiment, a first lateral side section of the elastic web material is joined to the first web portion and the second lateral side section of the elastic web material is joined to the second web portion.

It is advantageous displacing the first web portion and the second web portion with respect to one another such that a gap is provided between the first web portion and the second web portion before the elastic web material is attached to produce the laminate, and the elastic web material is attached such that it bridges the gap. By the provision of such a gap, the elastic properties of the resulting belt or side panel can be precisely adjusted.

Nevertheless, in a further advantageous version of the method, the first web portion and the second web portion are held in close relationship with respect to one another, and the attachment positions of the first lateral side section and the second lateral side section on the first and second web portions are placed at a distance from the actual cut line. As the attachment positions, in which the elastic web material is actually attached to the first web portion and to the second web portion, are spaced apart from the cut line, a considerable section of the elastic web material can act elastically between the first web portion and the second web portion.

In a preferred embodiment, the elastic web material is elastic in the cross machine direction. Furthermore, in some applications, it can be advantageous that the elastic web material is essentially non-elastic in the machine direction,
in particular such that it has the same elasticity as the web of material in the machine direction.

Preferably, in a further step, wing tabs are attached to one lateral side of the laminate at predetermined intervals. The dimensions of the predetermined intervals preferably correspond to the dimensions of the individual belt portions in the machine direction, such that at least one wing tab is situated on each individual belt.

In a preferred variant of the method, the elastic web material is fed in the form of a longitudinal strip of a cross machine dimension which is larger than the cross machine dimension of the gap. In particular, the cross machine dimension of the elastic web material is preferably smaller than the cross machine dimension of the web of material before it is cut.

In a further preferred embodiment, the method includes the additional steps of feeding a second web of material along the same direction as the first web of material, cutting the second web of material along the machine direction into a third web portion and a fourth web portion, and producing the laminate by feeding the elastic web of material between the first web of material and the second web of material and joining the elastic web of material with the first to fourth web portions.

In this preferred variant of the method, a laminate made up of two webs of material, which are essentially placed on top of one another, is prepared, wherein the elastic web material extends between the two webs of material in the section of the cut. This method enables the manufacture of a belt or side panel with a web material that may have different upper and lower sides. Furthermore, as the elastic web material is essentially sandwiched between the first web of material and the second web of material, there are essentially no sharp or
inconvenient edges extending from the elastic material such that a wearer does not necessarily come into contact with the elastic material.

In a preferred variant of this method, the elastic web material is essentially sandwiched between the first web of material and the second web of material at the first and third web portions and at the second and fourth web portions.

A laminate is produced in which two webs of material are essentially placed on top of one another and an elastic web material is cut into two, wherein the cut elastic web material connects the first and third web portion and the second and fourth web portion, bridging the cut. The first and second elastic web portions are also essentially placed on top of one another.

Accordingly, in this method, a laminate can be produced which has, on the one hand, an increased strength due to the attachment of the first and second webs of material on top of one another and, on the other hand, an increased strength of the elastic portion, in particular, with respect to the attachment of the elastic portions to the webs of material, as the elastic web is cut into two and attached to the webs of material.

In this respect, also two separate elastic web materials can be fed, one of which is placed between the first and the second webs of material, and the second of which is placed on top of the outer surface of the first web of material, bridging the cut in the first and second webs of material, respectively.

In a preferred variant, the first elastic web portion and the second elastic web portion are fed to the webs of material essentially along the same path, but are spaced apart from one another in the normal direction. The term “normal
direction" means a direction that is essentially orthogonal to the plane defined by the web material.

In another variant of the method, the first web of material has a cross machine dimension which is smaller than that of the second web of material, resulting in a laminate which has, on its one end, a section in which only the second web of material is present and is not overlaid by the first web of material. This specific embodiment provides advantages in terms of the wearing comfort of the resulting belt or side panel of the absorbent article.

It is preferred in the method that the first web portion and the second web portion, on the one hand, and the third web portion and the fourth web portion, on the other hand, are spaced apart from one another by the same amount, resulting in an equally spaced gap between the first web of material and the second web of material.

Furthermore, in yet another preferred variant, the first web of material and the second web of material are provided by folding over a single web of material such as to constitute an upper folded part and a lower folded part which act as the first web of material and the second web of material, respectively. This specific variant provides for an even more effective manufacturing method as a belt or side panel with wide dimensions can be manufactured which, in a preferred embodiment, may also carry elastic material at two different sections.

According to yet another variant, a method of manufacturing at least two belts or side panels of an absorbent article is suggested, the method comprising the steps of feeding a first web of material and a second web of material in the machine direction and cutting the first and second webs of material along the machine direction. Furthermore, an elastic web material is fed in the machine direction and the elastic web
material is cut along the machine direction into a first elastic web portion and a second elastic web portion. A first laminate is produced by attaching the first elastic web portion to the first web of material, bridging the cut, and a second laminate is produced by attaching the second elastic web portion to the second web of material, bridging the cut. At least two individual belts or side panels are cut from the laminates along the cross machine direction.

In the method described above, it is preferred is the two laminates are registered with one another before being cut and two individual belts or side panels are cut simultaneously from the registered laminates.

Preferably, in the method, an absorbent structure, in particular including a back sheet, a top sheet and an absorbent core, is fed in the machine direction of the laminate and the individual belt portion or the individual side panel portion is attached to the absorbent structure. The attachment of the individual belt structure or the individual side panel is preferably effected while travelling in the same direction as the absorbent structure such that they are moving at the same speed in the same direction.

Preferably, in order to increase the wearing comfort, the individual belt or the side panel are fixedly attached to the absorbent structure only on one of the lateral sides of the individual belt or the side panel. This enables using the belt or the side panel to be folded around a wearer. However, the other lateral side may be attached to the absorbent structure by a releasable bond in order to increase the production efficiency and the packaging efficiency.

According to a further aspect of the present invention, a laminate for an absorbent article is proposed, in particular for a belt or a side panel of an absorbent article, the laminate comprising at least a first web of material cut into
a first web portion and a second web portion, the first and second web portions being spaced apart from one another and being connected by an elastic web of material, wherein the laminate is manufactured by the method as explained above.

In a further preferred embodiment, the laminate comprises a first and a second web of material, the first web of material being cut into a first web portion and a second web portion, and the second web of material being cut into a third web portion and a fourth web portion, wherein the first and third web portions and the second and fourth web portions are placed essentially on top of one another, and the first and third portion and the second and fourth web portions are connected to one another by an elastic web material laminated between the web portions.

In yet another preferred embodiment, a second elastic web material, which also connects the first web portion to the second web portion, is placed on an outer surface of the first web of material.

It is preferred in accordance with another aspect of the invention that an absorbent article is provided, comprising a belt or side panel which is made from such a laminate.

4. BRIEF DESCRIPTION OF THE DRAWINGS

Various exemplary embodiments of the method will now be described in greater detail, by way of example only, with reference to the attached drawings, in which:

Figure 1 is a schematic perspective view of an exemplary method of manufacturing a belt or side panel of an absorbent article, providing one web of material and one elastic web material;
Figure 2 is a schematic perspective view of another exemplary method showing two webs of material between which a single elastic web material is sandwiched and joined to the two webs of material;

Figure 3 is a schematic perspective view of another method of manufacturing two belts or side panels, using two webs of material and two elastic web materials, wherein one elastic web material is joined to the first web of material and a second elastic web material is joined to the second web of material;

Figure 4 is a schematic perspective view of another exemplary method for manufacturing two belts of side panels, using two webs of material and a single elastic web material, wherein the single elastic web material is cut into a first elastic web portion and a second elastic web portion, wherein the first elastic web portion is joined to the second web of material, and the second elastic web portion is joined to the first web of material;

Figure 5 is a schematic perspective view of yet another method of manufacturing a belt or a side panel, using a first and a second web of material and three elastic web materials, wherein one elastic web material is joined to the first web of material and is substantially sandwiched between the first and the second webs of material and the two other elastic web materials are joined to the respective outer sides of the first and second webs of material;

Figure 6 is yet another schematic perspective view of an exemplary method which roughly resembles that shown in Figure 4, the difference being that only a single, but laterally extended, web of material is
used, which is folded into two layers of web of material.

5. DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE DISCLOSURE

Preferred exemplary embodiments of the method of manufacturing of a belt or a side panel of an absorbent article will now be described in detail with reference to the drawings, wherein similar reference numerals identify similar or identical elements and repeated description of these features in the respective embodiments is omitted.

Figure 1 shows a schematic perspective view of a preferred manufacturing method. A first web of material 1 is provided and is fed in the machine direction MD towards a cutting means 90, which is schematically shown in the Figure as a knife. The web of material 1 is cut by the cutting means 90 into a first web portion 10 and a second web portion 12. A gap 14 between the first and second portions 10, 12 is present, resulting from a slight displacement of the first web portion 10 and the second web portion 12 in the cross machine direction CD with respect to one another. Accordingly, after having passed the cutting and displacement step, the first web portion 10 and the second web portion 12 are carried parallel to one another in the machine direction MD, and a gap 14 is present between the first web portion 10 and the second web portion 12.

It should be understood, however, that even though the cut is situated in the embodiment shown basically in the middle of the web of material 1, it could also be situated in any other suitable position across the width of the web of material. In particular, the cut could be situated, for example, in a position of 1/3, 1/4, 1/5 or 1/6 of the width of the web of material, or in any other suitable position.
An elastic web material 3 is provided which joins the first web portion 10 and the second web portion 12. The elastic web material 3 basically bridges the cut, or the gap 14, between the first web portion 10 and the second web portion 12.

In other words, the elastic web material 3 is joined to its first lateral side section 30 to the first web portion 10 of the web of material 1 and with its second lateral side section 32 to the second web portion 12 of the web of material 1. In this respect, it is to be understood that the position of the actual joint between the elastic web material 3 and the first web portion 10 and the second web portion 12 might be in any suitable position on the web of material. Preferably, the joints are not necessarily situated on the lateral edges of the elastic web material, but rather towards the middle of the elastic web material to ensure a secure fastening. Accordingly, the elastic web material 3 bridges the gap 14 between the first web portion 10 and the second web portion 12 and, thus, reconnects the two previously cut-apart web portions 10, 12. In the method shown, at least the section of the elastic web material 3, which bridges the gap 14, acts as an elastic element which provides for elastic movement in the cross-direction CD in the resulting laminate 7. To be more specific, the section of the elastic web material 3 extending between the positions of the joints of the elastic web material with the first and second web portions 10, 12 serves as the elastic means. Accordingly, the laminate 7 comprises the originally fed web of material 1, cut into a first web portion 10 and a second web portion 12, and re-connected by the elastic web material 3.

The handling of the laminate 7 and the manufacturing method are improved if the elastic web material 3 is only elastic in the cross machine direction CD, but is essentially non-elastic in the machine direction MD. This is due to the fact that, in an arrangement in which the elastic web material 3 is essentially non-elastic in the machine direction MD, or,
more preferably, has an elastic module in the machine
direction which is identical to that of the web of material 1
in the machine direction, any wrinkling due to an elastic
tension of the elastic web material 3 in the machine
direction MD can be avoided. Nevertheless, if the elastic
web material 3 is elastic in the cross machine direction CD,
an elastic effect can be seen in the cross machine direction
CD of the laminate 7.

In a preferred manufacturing step, wing tabs 6 are attached
to the laminate, in particular to the outer lateral side of
the first web portion 10, wherein the wing tabs 6 are spaced
at intervals with respect to one another which essentially
correspond to the MD dimensions of the individual belts 70
which are cut from the laminate 7. In particular, more than
one wing tab can be situated on each individual belt, leading
to a different pitch of the wing tabs.

In a subsequent step, the laminate 7 is cut in the cross
machine direction CD into individual belts 70 or side panels.
In particular, the individual cuts are carried out in the
sections of the laminate 7 between the wing tabs 6 such that
the wing tabs remain intact.

In a preferred step, an absorbent structure 8, which is shown
in Figure 1 schematically in the form of a carrier web 8, is
fed in the same direction as the laminate 7. Accordingly,
the laminate 7 and the carrier web 8 travel in the same
direction. The carrying speeds of laminate 7 and carrier web
8 are distinct, but the speeds of the belt 70 and the carrier
web 8 are preferably identical in the section in which the
belts 70 are joined to the carrier web 8. The belt 70 is
then joined to the carrier web 8 on its attachment side 72,
wherein the attachment side 72 is situated opposite the side
74 of the belt 70 onto which the wing tabs 6 were placed.
This enables an efficient and continuous manufacture of
absorbent articles. As belts are only situated in discrete
portions of the carrier web, the speed of the laminate 7 is considerably lower than the speed of the carrier web 8.

The process of bonding the belt 70 to the carrier web 8 may be carried out according to different methods. According to one preferred method, the carrier web 8 is the top sheet (or the back sheet) of the absorbent article thus manufactured. The belt 70 is placed in an overlapping, or partially overlapping, relationship onto the carrier web 8 and the attachment side 72 of the belt 70 is joined to the carrier web 8, e.g. by applying an adhesive or by heat bonding. In a subsequent step, the back sheet (or top sheet) is applied to the top sheet (or back sheet), sandwiching and joining the attachment side 72 of the belt 70 between them.

In another preferred method of attaching the belt 70 to the carrier web 8, the belt 70 may be attached to the carrier web 8 by bending or folding the side 72 around one the edges 80 of the carrier web 8, resulting in a situation in which the attachment side 72 of the belt 70 is situated on the opposite surface of the carrier web 8 than the remainder of the belt 70. This method is described e.g. in WO 99/37263 A1.

Both methods of bonding the belt 70 to the carrier web 8 can also be used in all following methods described below.

Returning to Figure 1, even though a gap 14 is shown between the first web portion 10 and the second web portion 12, it is envisaged that in an alternative embodiment the first web portion 10 and the second web portion 12 are held in a close relationship with respect to one another such that only the cut itself is present at the position where the gap 14 is shown in Figure 1. The attachment positions of the first lateral side section and the second lateral side section on the first and second web portions, however, are placed at a distance from the actual cut line. In such an embodiment, the effective elastic portion of the elastic web material can
be achieved by placing the points of attachment of the first lateral side section 30 and the second lateral side section 32 at a distance from the actual cut line. In other words, a sufficient section of elastic material is provided between the positions in which the elastic web material is bonded to the web of material, in order to provide for elasticity in the resulting laminate.

Figure 2 shows a schematic perspective view of another preferred method of manufacturing a belt or a side panel of an absorbent article. A first web of material 1 is fed towards a cutting means 90, cutting the web of material 1 into a first web portion 10 and a second web portion 12, providing, by displacement in the cross machine direction CD, a gap 14 between the first web portion 10 and the second web portion 12.

A second web of material 2 is also fed in the machine direction MD towards a second cutting device 92, cutting the second web of material 2 into a third web portion 20 and a fourth web portion 22, providing, by displacement in the cross machine direction CD, a gap 24 between the third web portion 20 and the fourth web portion 22. The width of the gaps 14, 24 in the cross machine direction CD are kept essentially at the same value.

An elastic web material 3 is fed between the first web of material 1 and the second web of material 2 and is joined to the first and second web portions 10, 12 such that its first lateral side section 30 is joined to the third web portion 20 as well as with the first web portion 10. The second lateral side section of the elastic web material 3 is joined to the fourth web portion 22 and to the second web portion 12.

The resulting laminate 7 sandwiches the elastic web material 3 between the first web material 1 and the second web of
material 2 and the elastic web material 3 is joined to both layers of web material 1, 2.

The method of attachment of the finally cut individual belts 70 to the carrier web 8 corresponds to that shown and described with respect to Figure 1.

Figure 3 shows yet another variant of the present method of manufacturing two belts or side panels of an absorbent article simultaneously. The basic structure resembles that shown in and explained with respect to Figure 2. Nevertheless, in addition to the first elastic web material 3, a second elastic web material 4 is provided and fed in the machine direction MD. As can be seen in Figure 3, the second elastic web material 4 is placed on the second web of material 2, thus bridging the gap 24 between the third web portion 20 and the fourth web portion 22 and joining the third and fourth web portions 20, 22. The first elastic web material 3 and joins the first and second web portions 10, 12.

As a result, a first laminate 7 and a second laminate 9 having an elastic portion, provided by the first and second elastic web materials 3, 4 are formed. The two laminates 7, 9 are not attached to one another but are in a fixed positional relationship with respect to one another, i.e. they are registered with one another. In particular, the attachment side 92 of the second laminate 9 extends slightly in the lateral direction over the lateral edge of the first laminate 7. After been cut, this results in a first belt 70 stemming from the first laminate 7 made of the first web of material 1 and the first elastic web material 3, and a second belt 90 stemming from the second laminate made of the second web of material 2 and the second elastic web material 4. The belts 70, 90 are joined at attachment sides 72, 92 to the carrier web 8. The attachment sides 72, 92 are situated opposite to one another, resulting in a structure of a
carrier web 8 with two belts 70, 90 attached to it, wherein the belts are joined to two opposite edges 80, 82 of the carrier web 8 such that the non-joined sides 74, 94 of the belts 70, 90 are free, or attached to one another by a releasable bond, to be extended around the hip of a wearer. In other words, unlike in the method shown in Figure 2, the two laminates 7, 9 are not attached to one another but result in two separate belts 70, 90 which can be attached to the carrier web 8 in a fixed positional relationship (i.e. in a registered manner).

Nevertheless, in an alternative arrangement the first web of material 1 and the second web of material 2 may be joined together, resulting in a laminate in which the elastic web material 3 and the second elastic web material 4 are placed, in the section of the gap 14, 24, on top of one another. Thus, the gap 14 between the first web portion 10 and the second web portion 12 as well as the gap 24 between the third web portion 20 and the fourth web portion 22 are bridged by the second elastic web material 4. In addition to that, the gap 14 between the first web portion 10 and the second web portion 12 is bridged by the first elastic web material 3. This method results in a laminate 7 which has a high strength.

Figure 4 shows a perspective view of a further preferred method of manufacturing belts or side panels of an absorbent article. The two laminates 7 and 9 manufactured by this method essentially resemble those described with reference to the method described with respect to Figure 3. Nevertheless, in the method described, only a single elastic web material 3 is fed in the machine direction and is cut into a first elastic web portion 34 and a second elastic web portion 36. The elastic web material 3 is cut by a cutting means 94 which is schematically shown, by way of example only, as a knife.
The first elastic web portion 34 joins the first and second web portions 10, 12, substantially in the same manner as the first elastic web material 3 in Figure 3, and the second elastic web portion 36 joins the third and fourth web portions 20, 22, substantially in the same manner as the second elastic web material 4 in Figure 3.

In the embodiment shown in Figure 4, the second web of material 2 is shifted slightly in the cross machine direction CD with respect to the first web of material 1. Accordingly, the second laminate 9, in particular, the third web portion 20 and, thus, the attachment side 92, extends beyond the non-joined side 74 of the first laminate 7. The resulting belts 70, 90, however, have the same dimensions (length) in the lateral (cross machine) direction.

Figure 5 shows yet another schematic perspective view of still another preferred method. In the method, a third elastic web material 5 is fed in the machine direction MD and is joined to the lower surface of the second web of material 2. The first elastic web material 3 is joined to the upper surface of the first web of material 1 and the third elastic web material 5 is joined to the lower surface of the second web of material 2. Additionally, a second elastic web material 4 is sandwiched between the first web of material 1 and the second web of material 2 and joined to both webs of material 1 and 2. The resulting laminate 7 has, accordingly, three layers of elastic web material and two layers of webs of material attached on top of one another, leading to a relatively strong laminate.

Figure 6 shows yet another preferred method of manufacturing a laminate 7 and a belt 70. The main difference between this method and the method described with reference to Figure 4 is that only a single, relatively wide web of material 1 is fed in the machine direction MD and that this single web of
material 1 is folded over such as to constitute an upper folded part 16 and a lower folded part 18.

The upper folded part 16 and the lower folded part 18 are fed in the same manner as the first web of material 1 and the second web of material 2 in Figure 4. Nevertheless, the elastic web material 3, which is cut into a first elastic web portion 34 and a second elastic portion 36 by a cutting means 94, is placed on top of the upper folded part 16 and on top of the lower folded part 18. In particular, the first elastic web portion 34 is placed over the gap 14 and the second elastic web portion 36 is placed over the gap 24.

The resulting belt 70 or side panel can be folded open at the resulting fold 76 and, thus, provides a length corresponding to the original full width of the web of material 1 plus the width of the gaps 14, 24 with two elastic sections.
Claims

1. Method of manufacturing a belt (70) or a side panel of an absorbent article, the method comprising the steps of:
   feeding a web of material (1) in the machine direction (MD);
   cutting the web of material along the machine direction into at least a first web portion (10) and a second web portion (12);
   producing a laminate (7) by feeding an elastic web material (3) along the machine direction and joining it with the first web portion and the second web portion; and
   cutting individual belts (70, 90) or side panels from the laminate along the cross machine direction (CD).

2. Method according to claim 1, wherein a first lateral side section (30) of the elastic web material is joined to the first web portion and a second lateral side section (32) of the elastic web material is joined to the second web portion.

3. Method according to claim 1 or 2, wherein the first web portion and the second web portion are displaced with respect to one another such that a gap (14) is provided between them before the elastic web material is joined, and joining the elastic web material such that it bridges the gap.

4. Method according to claim 1 or 2, wherein the first web portion and the second web portion are held in a close relationship with respect to one another, and the attachment positions of the first lateral side section and the second lateral side section on the first and second web portions are spaced apart from the actual cut line.

5. Method according to any one of the preceding claims, wherein the elastic web material is elastic in the cross machine direction (CD).
6. Method according to any one of the preceding claims, wherein the elastic web material is essentially non-elastic in the machine direction (MD).

7. Method according to any one of the preceding claims, wherein wing tabs (6) for fastening the belts or side panels to a wearer are attached to at least one lateral side of the laminate at predetermined intervals.

8. Method according to claim 7, wherein the dimensions of the predetermined intervals correspond to the dimensions of the individual belts or side panels in the machine direction (MD) such that at least one wing tab is situated on each individual belt or the side panel.

9. Method according to any one of the preceding claims, wherein the elastic web material is fed in the form of a single longitudinal strip of a dimension in the cross machine direction larger than the cross-machine dimension of the gap.

10. Method according to claim 9, wherein the cross-machine dimension of the elastic web material is smaller than the cross-machine dimension of the web of material before it is cut.

11. Method according to any one of the preceding claims, including the additional steps of:

   feeding a second web of material (2) in the machine direction (MD);

   cutting the second web of material along the machine direction into a third web portion (20) and a fourth web portion (22);

   producing the laminate by feeding the elastic web material between the first web of material and the second web of material and joining the elastic web material with the first to fourth web portions.
12. Method according to claim 11, wherein the first lateral side section of the elastic web material is joined to the first web portion and the third web portion, and the second lateral web side section of the elastic web material is joined to the second web portion and the fourth web portion.

13. Method according to any one of claims 1 to 10, including the additional steps of:
   feeding a second web of material (2) in the machine direction (MD);
   cutting the second web of material along the machine direction into a third web portion (20) and a fourth web portion (22);
   producing a second laminate (9) by feeding a second elastic web material (4) along the machine direction (MD) and joining it to the third web portion and the fourth web portion.

14. Method according to claim 13, wherein a first lateral side section of the second elastic web material is joined to the third web portion and a second lateral side section of the second elastic web material is joined to the fourth web portion.

15. Method according to claim 13 or 14, wherein the elastic web materials (3, 4) are provided by cutting a single elastic web material along the machine direction (MD) into a first elastic web portion (34) and a second elastic web portion (36).

16. Method according to any one of claims 13 to 15, wherein the first elastic web portion and the second elastic web portion are fed to the webs of material essentially along the same path but spaced apart from one another in a direction normal to the plane of the webs of material.
17. Method according to any one of claims 13 to 16, wherein the first web of material has an extension in the cross machine direction that is smaller than that of the second web of material.

18. Method according to any one of claims 13 to 17, wherein the first web portion and the second web portion, on the one hand, and the third web portion and the fourth web portion, on the other hand, are spaced apart from one another by the same amount, resulting in an equally spaced gap between the first web of material and the second web of material.

19. Method according to any one of claims 13 to 18, wherein the first web of material and the second web of material are provided by folding over a single web of material such as to constitute an upper folded part (16) and a lower folded part (18) which act as the first web of material and the second web of material, respectively.

20. Method according to any one of the preceding claims, wherein an absorbent structure (8), in particular including a back-sheet, a top-sheet and an absorbent core, is fed in the machine direction and the individual belt or the individual side panel is joined to the absorbent structure.

21. Method according to claim 20, wherein the absorbent structure and the individual belt or the individual side panel are caused to travel in the same direction, and preferably with the same speed, before the joint is effected.

22. Method according to claim 20 or 21, wherein the individual belt or side panel is fixedly attached to the absorbent structure only on one lateral attachment side (72) of the individual belt or side panel.
23. Method according to claim 20, wherein the other lateral side of the belt or side panel is attached to the absorbent structure by a releasable bond.

24. Method according to any one of claims 20 to 23, wherein the attachment side (72) of the belt or side panel is at least partially sandwiched between two layers of the absorbent structure, in particular between the top sheet and the back sheet.

25. Method according to claim 24, wherein the attachment side of the belt or side panel is folded around a lateral edge of the absorbent structure before it is joined to the absorbent structure.

26. Method of manufacturing at least two belts (70) or side panels of an absorbent article, the method comprising the steps of:
   feeding a first web of material (1) and a second web of material (2) in the machine direction (MD);
   cutting the first and second webs of material (1, 2) along the machine direction;
   feeding an elastic web material (3) in the machine direction;
   cutting the elastic web material (3) along the machine direction into a first elastic web portion (34) and a second elastic web portion (36);
   producing a first laminate (7) by attaching the first elastic web portion to the first web of material, bridging the cut;
   producing a second laminate (9) by attaching the second elastic web portion to the second web of material, bridging the cut; and
   cutting two individual belts (70, 90) or side panels from the laminates along the cross machine direction (CD).
27. Method according to claim 26, wherein the two laminates are registered with one another before being cut; and simultaneously cutting two individual belts or side panels from the registered laminates.

28. Laminate for an absorbent article, in particular, for a belt or a side panel of an absorbent article, the laminate comprising at least a first web of material (1) cut into a first web portion (10) and a second web portion (12), the first and the second web portions being spaced apart from one another and being connected by an elastic web material (3), the laminate being manufactured by the method according to one of the preceding claims.

29. Laminate according to claim 28, comprising a first web of material (1) and a second web of material (2), the first web of material being cut into a first web portion (10) and a second web portion (12) and the second web of material being cut into a third web portion (20) and a fourth web portion (22), the first and the third web portions and the second and fourth web portions, respectively, are joined to one another by an elastic web material laminated between the web portions.

30. Absorbent article comprising at least one belt or side panel made from the laminate according to any one of the claims 28 or 29.
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

INV. A61F13/15

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

A61F

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

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

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>claims 21, 22; figures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>column 11, line 42 - column 14, line 58; figures 7-11</td>
<td></td>
</tr>
</tbody>
</table>

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

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)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

I 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

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

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.

S document member of the same patent family

**Date of the actual completion of the international search**

14 October 2008

**Date of mailing of the international search report**

04/11/2008

**Name and mailing address of the ISA/Authorized officer**

European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk
Tel. (+31-70) 940-2040, Fax (+31-70) 340-3016

Douskas, K
<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AU 3129395 A</td>
<td>04-03-1996</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CA 2196598 A1</td>
<td>15-02-1996</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 69517526 D1</td>
<td>20-07-2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 69517526 T2</td>
<td>01-03-2001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 3474194 B2</td>
<td>08-12-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 2000510349 T</td>
<td>15-08-2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 9603952 A1</td>
<td>15-02-1996</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ZA 9506369 A</td>
<td>13-03-1996</td>
</tr>
<tr>
<td>US 5876531 A</td>
<td>02-03-1999</td>
<td>AU 709445 B2</td>
<td>26-08-1999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AU 1958197 A</td>
<td>22-09-1997</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BR 9707949 A</td>
<td>27-07-1999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CN 1212615 A</td>
<td>31-03-1999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CZ 9802820 A3</td>
<td>17-02-1999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 69721746 D1</td>
<td>12-06-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 69721746 T2</td>
<td>18-03-2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ES 2197989 T3</td>
<td>16-01-2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HU 9902205 A2</td>
<td>29-11-1999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NZ 331911 A</td>
<td>28-10-1999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PL 328694 A1</td>
<td>15-02-1999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SK 119698 A3</td>
<td>11-02-1999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 9732555 A1</td>
<td>12-09-1997</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ZA 9701169 A</td>
<td>25-08-1997</td>
</tr>
</tbody>
</table>