Title of the Invention: Improvements in or relating to support members for a breast support garment
Abstract Title: A breast support member with a tapered edge

A breast support member comprising a laminar support body with a spacer member 22 with a first thickness, a first outer fabric portion 24 secured to a first side of the spacer 22 and having a second thickness which is less than the first thickness and a second outer fabric portion 28 secured to an edge of the first outer fabric portion 24 and extending towards a second side of the spacer 22 and having a third thickness which is less than the first thickness wherein the second outer fabric portion 28 defines a tapered edge profile for the support member. A chamber 34 may be formed in the tapered region which has a resiliently deformable filler 36. The taper may be sculptured. The second fabric portion 28 may be ultrasonically welded in place and may have an adhesive layer.

Figure 1
IMPROVEMENTS IN OR RELATING TO SUPPORT MEMBERS
FOR A BREAST SUPPORT GARMENT

This invention relates to a support member for a breast support garment and a breast support garment including such a support member.

According to a first aspect of the invention there is provided a support member, for a breast support garment, comprising:

- a laminar support body including a spacer member having a first thickness and first and second sides, the spacer member having a first outer fabric portion secured to the first side thereof, the first outer fabric portion having a second thickness which is less than the first thickness; and
- a second outer fabric portion having a third thickness which is less than the first thickness, the second outer fabric portion being secured to a first edge of the first outer fabric portion and extending towards the second side of the spacer member, the second outer fabric portion further being secured to the second side of the spacer member to define a tapered edge profile of the support member.

The provision of a support member which has a tapered edge profile presents an accommodating and forgiving support member to a wearer of, e.g. an associated breast support garment. As a result such a support member and the resulting breast support garment are more comfortable to wear than a similar garment including a conventional support member.

In a preferred embodiment of the invention the second outer fabric portion additionally extends away from and towards the spacer member. Having the second outer fabric portion additionally extend away from and towards the spacer member allows the second outer fabric portion to define a more gradually tapering edge profile which is readily able to conform to the contours of a wearer's body.

In a further preferred embodiment of the invention the segment of second outer fabric portion extending away from and towards the spacer member defines a tapered chamber lying between the second outer fabric portion and the spacer member.

The provision of a tapered chamber permits tailoring of the deformable characteristics of the edge profile according to the required performance characteristics of the support member and associated breast support garment. For example, if the support member
and garment are to be used in a sports garment it may be desirable to imbue the edge profile with a greater resistance to deformation, as opposed to if the support member is incorporated in a sleepwear garment in which comfort considerations may be paramount and so a more deformable edge profile may be required.

Optionally the tapered chamber holds a resiliently deformable filler. The inclusion of a resiliently deformable filler in the tapered chamber permits the edge profile to adapt in use to changes in the shape of a wearer’s body while providing a desired degree of support to the wearer’s body.

The tapered chamber may have a sculptured profile. A sculptured profile, e.g. curved or otherwise differing from substantially straight, provides for further tailoring of the performance and comfort characteristics of the tapered edge profile.

Preferably the spacer member is resiliently deformable and the second outer fabric portion acts to deform the spacer member to define the tapered edge profile. Deforming the spacer member in this manner readily provides the desired tapered edge profile with a minimal degree of secondary finishing.

The spacer member may include at least one deformation extending between one side of the spacer member and a first edge of the spacer member extending between the first and second sides of the spacer member. The inclusion of one or more such deformations helps to provide the tapered edge profile with a desired cross-sectional shape which promotes comfort in wear.

Optionally at least one deformation has a sculptured profile. The inclusion of a sculptured profile, e.g. e.g. a curved profile or a profile which otherwise differs from substantially straight, provides for further tailoring of the performance and comfort characteristics of the tapered edge profile.

In a further preferred embodiment of the invention the second outer fabric portion is ultrasonically welded to the first edge of the first outer fabric portion. Such welding helps to provide a virtually invisible join between the first and second outer fabric portions which is no thicker than the thickness of the fabric portions themselves but still sufficiently strong.
Preferably the second outer fabric portion includes an adhesive layer lying on an inwardly facing surface thereof. The inclusion of such an adhesive layer permits ready securing of the second outer fabric portion to the second side of the spacer member.

According to a second aspect of the invention there is provided a breast support garment including at least one support member as described hereinabove. The breast support garment shares the associated benefits of the support member.

There now follows a brief description of preferred embodiments of the invention, by way of non-limiting examples, with reference being made to the following figures in which:

Figure 1 shows a portion of a support member according to a first embodiment of the invention;

Figure 2 shows a portion of a support member according to a second embodiment of the invention;

Figure 3 shows a portion of a support member according to a third embodiment of the invention;

Figure 4 shows a portion of a support member according to a fourth embodiment of the invention; and

Figure 5 shows a portion of a support member according to a fifth embodiment of the invention.

A support member according to a first embodiment of the invention is designated generally by the reference numeral 10. The support member 10 shown is for a breast support garment such as a brassiere and takes the form of a breast support cup. The support member 10 could also be incorporated in a sportswear, underwear, nightwear, swimwear or other similar garment to provide breast support.

The support member 10 includes a laminar support body 12 which includes a spacer member 14 that has a first thickness T₁ and first and second sides 16, 18. A first edge 20 of the spacer member 14 extends between the first and second sides 16, 18.

In the embodiment shown the spacer member 14 takes the form of a spacer fabric 22 which includes a plurality of resiliently deformable fibres extending between opposed surfaces of the fabric 22. In other embodiments of the invention (not shown) the spacer member 14 may be formed from a differing spacer fabric which may include a plurality of distinct layers. The spacer member 14 may also be or include a foam layer.
The spacer member 14 has a first outer fabric portion 24 which is secured to the first side 16 thereof. The first outer fabric portion 24 may be so secured by an adhesive or the like. In the embodiment shown the spacer member 14 also includes a further outer fabric portion 25 secured, e.g. by an adhesive, to the spacer member 14 to define the second side 18 thereof.

The first outer fabric portion 24 has a second thickness $T_2$ which is less than the first thickness. Typically the second thickness $T_2$ is less than 1/5 the first thickness $T_1$.

The first outer fabric portion 24 has a first edge 26 which, in the embodiment shown is coincident with the first edge 20 of the support member 14. In other embodiments of the invention (not shown) the first edge 26 of the first outer fabric portion 24 may not be coincident with the first edge 20 of the support member 14. For example, the first edge of the first outer fabric portion 24 may lie inboard of the first edge 20 of the spacer member 14.

The support member 10 also includes a second outer fabric portion 28 which has a third thickness $T_3$. The third thickness $T_3$ is less than the first thickness $T_1$ and, in the embodiment shown, is the same as the second thickness $T_2$. More particularly, in the embodiment shown the first and second outer fabric portions 24, 28 are formed from the same type of fabric. In other embodiments of the invention, however, the first and second outer fabric portions 24, 28 may have a different thickness and/or be formed from different fabrics.

The second outer fabric portion 28 is secured to the first edge 26 of the first outer fabric portion 24. In the embodiment shown an edge 30 of the second outer fabric portion 28 is ultrasonically welded to the first edge 26 of the first outer fabric portion 24.

The second outer fabric portion 28 extends towards and is secured to the second side 18 of the spacer member 14 to define a tapered edge profile 32 of the support member 10.

More particularly the second outer fabric portion 28 additionally extends away from and towards the spacer member 14 and defines a tapered chamber 34 which lies between the second outer fabric portion 28 and the spacer member 14. In the embodiment shown in Figure 1 the tapered chamber 34 holds a resiliently deformable filler 36 in the form of a gel insert 38.
The second outer fabric portion 28 has an adhesive layer 40 on an inwardly facing surface 42 thereof. The adhesive layer 40 facilitates retention of the filler 36, i.e. gel insert 38, and can also be utilised to help secure the second outer fabric portion 28 to the second side 18 of the spacer member 14.

In other embodiments of the invention, such as the support member 50 according to a second embodiment of the invention shown in Figure 2, the gel insert 38 completely fills the tapered chamber 34.

In still further embodiments (not shown) the resiliently deformable filler may be a foam insert.

In additional embodiments of the invention (not shown) the tapered chamber 34 may have a sculptured, i.e. curved or otherwise not substantially straight, cross-sectional profile.

A support member 60 according to a third embodiment of the invention is illustrated schematically in Figure 3.

The third support member 60 is similar to the first and second support members 10; 50, and like features share the same reference numerals.

The spacer member 14 in the third support member 60 is resiliently deformable and the second outer fabric portion 28 acts to deform the spacer member 14 to define the tapered edge profile 32.

A fourth support member 70 according to another embodiment of the invention is similar to the third support member 60, and is shown in Figure 4. The fourth support member 70 includes a first deformation 72 which extends between the first side 16 and the first edge 20 of the spacer member 14. The first deformation 72 may be formed by a secondary processing operation such as passing the tapered edge profile 32 through a pair of shaped rollers.

A fifth support member 80 according to a still further embodiment of the invention, as shown in Figure 5, is similar to the fourth support member 70. The fifth support member
80 includes a first deformation 72 and a second deformation 82 which extends between the second side 18 and the first edge 20 of the spacer member 14.

In further embodiments of the invention (not shown) one or other, or both, of the first and second deformations 72, 82 may have a sculptured profile.
CLAIMS:

1. A support member, for a breast support garment, comprising:
   a laminar support body including a spacer member having a first thickness and
   first and second sides, the spacer member having a first outer fabric portion secured to
   the first side thereof, the first outer fabric portion having a second thickness which is less
   than the first thickness; and
   a second outer fabric portion having a third thickness which is less than the first
   thickness, the second outer fabric portion being secured to a first edge of the first outer
   fabric portion and extending towards the second side of the spacer member, the second
   outer fabric portion further being secured to the second side of the spacer member to
   define a tapered edge profile of the support member.

2. A support member according to Claim 1 wherein the second outer fabric portion
   additionally extends away from and towards the spacer member.

3. A support member according to Claim 2 wherein the segment of second outer
   fabric portion extending away from and towards the spacer member defines a tapered
   chamber lying between the second outer fabric portion and the spacer member.

4. A support member according to Claim 3 wherein the tapered chamber holds a
   resiliently deformable filler.

5. A support member according to Claim 3 or Claim 4 wherein the tapered chamber
   has a sculptured profile.

6. A support member according to Claim 1 wherein the spacer member is resiliently
   deformable and the second outer fabric portion acts to deform the spacer member to
   define the tapered edge profile.

7. A support member according to Claim 6 wherein the spacer member includes at
   least one deformation extending between one side of the spacer member and a first edge
   of the spacer member extending between the first and second sides of the spacer
   member.

8. A support member according to Claim 7 wherein at least one deformation has a
   sculptured profile.
9. A support member according to any preceding claim wherein the second outer fabric portion is ultrasonically welded to the first edge of the first outer fabric portion.

10. A support member according to any preceding claim wherein the second outer fabric portion includes an adhesive layer lying on an inwardly facing surface thereof.

11. A breast support garment including at least one support member according to any preceding claim.

12. A support member generally as herein described with reference to and/or as illustrated in the accompanying drawings.

13. A breast support garment generally as herein described with reference to and/or as illustrated in the accompanying drawings.
Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

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<th>Identity of document and passage or figure of particular relevance</th>
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<td>X</td>
<td>1-11</td>
<td>US2006/141905 A1 LAU, See figure 21 in particular</td>
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<td>X</td>
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<td>WO2012/023059 A1 GRIPPAUONO, See figure 1A in particular</td>
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The following online and other databases have been used in the preparation of this search report:

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