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(71) Applicant (for all designated States except US): SARA LEE CORPORATION [US/US]; 1000 E. Hanes Mill Road, Winston-Salem, NC 27105 (US).

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(72) Inventor; and

(75) Inventor/Applicant (for US only): BUGADA, Andrea [IT/IT]; Via Verdi, 1, I-24036 Ponte S. Pietro (IT).

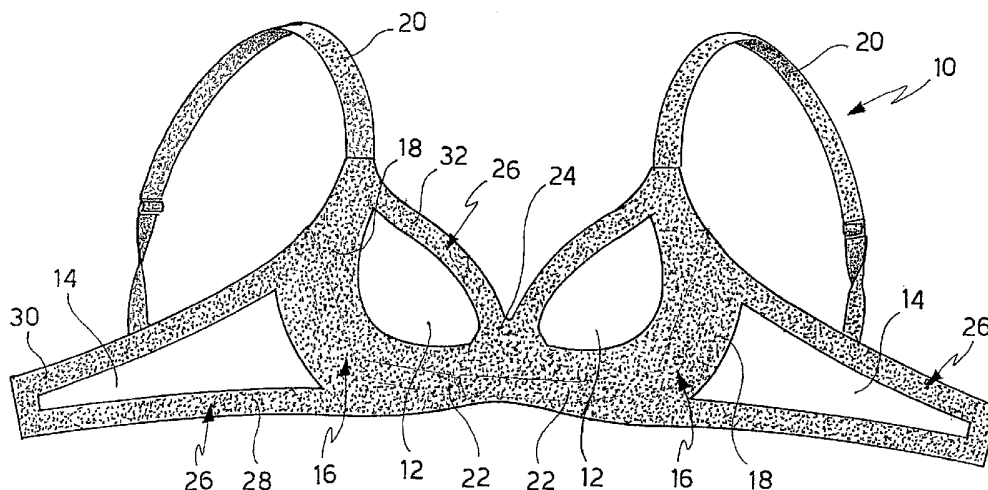
(74) Agents: VITTORANGELI, Lucia et al.; Jacobacci & Partners S.p.A, Via Senato, 8, I-20121 Milano (IT).

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A BRASSIERE



(57) Abstract: A brassiere (10) has two cups (12) of fabric connected to each other and two side bands (14), which extend from the cups and are suitable for connecting to each other. Reinforcing means has at least one layer (16) of chemical material suitable for being applied along at least an edge portion of the cups and for forming an integral part of the fabric. The material has a polyurethane mix or a silicone mix. The layer (16) is applied at least along a side portion (18) of the edge of each cup (12) which faces towards the respective band (14) and extends with no break in continuity at least as far as the point of connection to a shoulder strap (20), wrapping around the respective cup at the side. Moreover, the layer (16) is applied at least along a lower portion (22) of the edge of each cup (12), which extends with no break in continuity into the side portion (18) of the edge of the cup, wrapping around the respective cup (12) at the bottom and at the side.

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DESCRIPTION

"A Brassiere"

BACKGROUND OF THE INVENTION

Field of the invention

5 [0001] This invention relates to a brassiere comprising two fabric cups connected to each other and two side bands which extend from the cups and are suitable for connecting to each other.

Description of the Related Art

10 [0002] Brassieres of the type indicated above are known in which wires, stitching or other similar solutions are provided as reinforcing and support elements to be applied to the edges which delimit the cups.

15 [0003] The application of such elements and the use of the brassieres thus obtained, while partly solving the problem of supporting and reinforcing the cups, do have some disadvantages.

20 [0004] Firstly, various successive manufacturing steps are required, following which the wire is applied to the lower portion of the cups. Secondly, the brassiere which is obtained has parts that are very rigid, limits its wearability, and very thick compared with the remaining fabric part.

25 [0005] The problem underlying this invention is that

of proposing a brassiere which has structural and functional characteristics such as to overcome the above-mentioned disadvantages cited with reference to prior art while still solving the requirement to provide
5 a reinforcing and supporting effect for the cups.

SUMMARY OF THE INVENTION

[0006] This problem is solved by means of a brassiere of the type specified above, according to claim 1.

10 DESCRIPTION OF THE DRAWINGS

[0007] Further characteristics and advantages of the brassiere according to the invention will become clear from the following description of preferred examples of embodiment of the invention given with reference to the
15 appended drawings which are provided by way of non-limiting example, and in which:

[0008] Figure 1 illustrates a front view partly in perspective of an element of a brassiere according to the present invention;

20 [0009] Figure 2 illustrates a front view partly in perspective of a brassiere according to the present invention;

[0010] Figure 3 illustrates a front view partly in perspective of a possible embodiment of the brassiere
25 according to the present invention.

DESCRIPTION OF THE INVENTION

[0011]With reference to the above-mentioned drawings, the number 10 indicates a brassiere as a whole, the basic structure of which is shown
5 schematically in Figure 1.

[012]In what follows, the terms top or upper and bottom or lower refer to the brassiere as worn. Therefore, the top or upper part of the brassiere is for example the part pertaining to the area from which the
10 shoulder straps, if any, run, while the bottom or lower part is the opposite one.

[0013]The brassiere 10 comprises two cups made of fabric and connected to each other. In the Figures, the number 12 indicates the cups, that is a portion
15 substantially extending between the upper portion of the brassiere and an edge 12a shown in dotted line in Figure 1. According to a possible embodiment, shown in the drawings, for example, the two cups are made in one piece from the same fabric.

20 [0014]In the examples shown, the number 14 refers to the side bands which extend sideways from the cups and are suitable for connecting to each other for example by hooking means, not shown, suitable for attaching to a free end 14a of said bands.

25 [0015]The brassiere according to the invention

advantageously comprises reinforcing means comprising at least one layer 16 of chemical material suitable for being applied along at least a portion of the edge 12a of the cups 12 and partially extending inward and outward in respect of the cup. In particular, as will be better disclosed subsequently, the layer 16 is suitable for being applied along a lower portion and/or a side portion of the cup. Said layer 16 is advantageously suitable for forming an integral part of the fabric.

5

10 This layer will also be referred to subsequently as a reinforcing layer.

[0016]According to a possible form of embodiment, the material from which the reinforcing layer is obtained comprises at least one thermoplastic component suitable for retaining the properties of melting and resolidifying each time it is heated and cooled without its physical characteristics being impaired. In more detailed terms, the above-mentioned material comprises a polyurethane mix.

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[0018]According to a different embodiment, the material which forms the reinforcing layer comprises at least one elastic component. In more detailed terms, this above-mentioned material comprises a silicone mix.

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[0019]According to a further possible embodiment, and in particular in both the above disclosed

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embodiments, the material which forms the reinforcing layer also comprises pigments and/or further cosmetic elements.

[0020]As shown in Figures 1 and 2, the reinforcing layer is applied along a side portion 18 of each of the two cups 12, on the side of the cup edge which faces towards the respective side band 14, forming an integral part of the fabric. In more detail, the above-mentioned layer is applied along the side portion 18 of the cup and extends with no break in continuity at least as far as a point of connection to a shoulder strap 20 or to an upper portion of the brassiere, wrapping around the respective cup at the side.

[0021]In the example shown in Figures 1 and 2, the above-mentioned reinforcing layer is also applied at least along a lower portion 22 of each cup, forming an integral part of the fabric.

[0022]In more detail, the above-mentioned layer is applied along the lower portion 22 of each cup and extends with no break in continuity along the respective side portion 18, wrapping around the respective cup 12 at the bottom and at the side.

[0023]In the example in Figures 1 and 2, the above-mentioned reinforcing layer also wraps around the two cups with no break in continuity, since the reinforcing

layers of each cup meet in the lower portion 22 between the two cups. According to a possible embodiment, the lower portion 22 between the two cups extends slightly towards the upper part of the brassiere in the portion between the two cups 12 and widens towards the sides in the portion between the two cups to form a joining portion 24.

[0024]According to a possible embodiment the side portions 18 have a greater width than the lower portions 22 of the above-mentioned layer. In more detailed terms, the width of the reinforcing layer decreases gradually and continuously from the side portions 18 to the lower portions 22 of the above-mentioned layer.

[0025]As shown in Figures 1 and 2, provision may also be made for further layers 26 of chemical material suitable for being applied along at least an edge portion of the brassiere and for forming an integral part of the fabric. In what follows, the further layers 26 will also be indicated as edge layers.

[0026]In more detailed terms, Figures 1 and 2 show a brassiere in which a further layer 26 is provided along the whole outer edge of the brassiere comprising a lower edge portion 28, an upper edge portion 30 corresponding to the portion of the sides band, and an upper edge portion 32 corresponding to the brassiere

proper. Clearly, other variants may be provided in which the further layer is provided only on part of the edge of the brassiere or is completely absent.

[0027]As shown in Figures 1 and 2, the above-
5 mentioned further layer 26 is preferably of constant width over all the edges of the brassiere.

[0028]According to a possible embodiment, the further layers 26 suitable for being applied along at least an edge portion of the brassiere 10 are produced
10 from the same material as the reinforcing layer 16.

[0029]According to a possible embodiment, where the brassiere provides for a further layer 26 applied along at least a lower edge portion 28 of the brassiere, it is particularly advantageous that the latter should be
15 fused with the lower portion 22 of the layer of the reinforcing means, in the area below the cups 12, as shown in Figure 1, for example.

[0030]According to a possible embodiment, where the brassiere provides for a further layer 26 applied along
20 at least an upper edge portion 30 of the side bands 14 it is particularly advantageous that the latter, for at least part of its length, should be fused with the side portion 18 of the layer of the reinforcing means.

[0031]According to a possible embodiment, where the
25 brassiere provides for a further layer 26 applied along

at least an upper edge portion 32 of the brassiere, it is particularly advantageous that the latter, at least for the end areas, should be fused respectively with the side portion 18 and with the lower portion 22 of the layer of the reinforcing means, for example at the joining portion 24 if present.

[0032]According to a possible embodiment, the further layers 26 suitable for being applied along at least an edge portion of the brassiere have a smaller width than the layer 16 of the reinforcing means.

[0033]Figure 1 shows schematically the basic structure of a brassiere 10 according to the invention, while Figure 2 shows schematically a brassiere 10 provided with shoulder straps 20 of conventional type, made in one piece, for example, or separately and attached subsequently to the structure in Figure 1.

[0034]According to a further possible embodiment, shown in Figure 3 for example, the reinforcing means comprise at least one layer 16 of chemical material suitable for being applied along at least a portion of the shoulder straps 20 and for forming an integral part of the fabric.

[0035]According to a possible embodiment, shown in Figure 3 for example, the layer of chemical material extends continuously along at least a portion of the

shoulder straps 20 and along a side portion 18 of each cup which faces towards the respective band 14, forming an integral part of the fabric. In more detailed terms, the layer of chemical material applied to the shoulder
5 straps 20 has a smaller width than the layer applied to the side portion 18 of the edge of the cup 12 which faces towards the respective side band 14.

[0036]Where both a side portion 18 and a lower portion 22 are provided, the layer extends with no break
10 in continuity from the lower portion 22 to the side portion 18 continuing along the shoulder straps 20, thus wrapping around the respective cup both at the bottom and at the side, and supporting it at the top by means of the shoulder straps.

15 [0037]Even where the shoulder straps provide for a layer of chemical material suitable for becoming an integral part of the fabric, the shoulder straps may be made separately from the brassiere and applied to it or may be produced in one piece with the brassiere.

20 [0038]According to a possible embodiment, where the shoulder straps are applied to the structure of the brassiere, the joining means may advantageously comprise the same layer of material which is made to melt partially so as to weld it.

25 [0039]The layers as described above, both in the

case of the reinforcing layer 16 and in the case of the edge layer 26, are printed onto a base fabric of the brassiere. In more detailed terms, the layers are applied to a fabric by means of a screen printing process or advantageously by means of a cylinder printing process.

[0042]According to a possible embodiment, the layers described above, and in particular the reinforcing layer, are applied in a uniform thickness, obtained with a single printing step or with several successive steps to obtain sub-layers.

[0043]According to further advantageous embodiments, by applying several printing steps, layers with different thicknesses can be obtained on different portions of the brassiere, depending on the strength to be produced.

[0044]From the above, it can be appreciated how the provision of a brassiere according to the invention achieves the desired action of supporting and reinforcing the cups, especially at the sides, simply and effectively while reducing the thickened areas and rigid parts found in conventional brassieres.

[0045]In particular, a particularly flat, flexible brassiere is obtained without rigid accessories such as wires, while still maintaining an optimum reinforcing

and supporting effect.

[0046] A measure found to be particularly effective is to produce a continuous reinforcing layer both on the side portion and on the lower portion, especially if
5 this meets between the two cups in a joining portion. This means that there is complete wrapping around the cup without its being rigidly constricted.

[0047] Moreover, the provision of an integrated layer in the shoulder straps further improves the
10 reinforcing effect as well as increasing the strength, particularly resistance to wear, of a highly stressed part. In addition to the above, the material integrated in the shoulder straps may have the effect of increasing the friction of these on the shoulders of the wearer,
15 improving wearability.

[0048] The combination of reinforcing layers and edge layers, coupled so as to co-operate, to the extent of meeting in certain portions, increases the strength of the whole article and in particular of the points
20 which absorb the stresses to which the reinforcing layers are subject in their supporting action.

[0049] A further advantage of the brassiere according to the invention consists in its unusual structural simplicity, which enables it to be produced
25 at very moderate cost. Moreover, for example in case of

layers in polyurethane mix, the reinforcing layers and the edge layers have no unfavourable effects on subsequent preforming of the brassiere where this is employed.

5 [0050] It is clear that variants and/or additions are possible to what is described and illustrated above.

[0051] As an alternative to what is shown in Figure 1, the two cups 12 may be made separately and then joined together by means of connecting elements. In this
10 case, the two lower portions of the layer of reinforcing material are also separate from each other.

[0052] As an alternative to what is described in the drawings, the reinforcing layer 16 may comprise only the side portions 18 which face towards the respective side
15 band or only the lower portions 22.

[0053] According to a possible embodiment of the brassiere according to the present invention, as an alternative to what is shown in the drawings, the brassiere 10 comprises only reinforcing layers and does
20 not comprise edge layers, or only some portions of these layers.

[0054] According to a possible form of one embodiment, the brassiere is not provided with shoulder straps. In this case, side portions may be provided
25 which extend with no break in continuity at least as far

as an upper portion of the brassiere, wrapping around the respective cup at the side. In addition wires and/or reinforced edges may be provided to support the cups.

[0055]By contrast with what is shown in the
5 drawings, the brassiere may comprise a reinforcing layer
16 for each cup, each independent of the other, i.e.
without a joining portion between the two cups.

[0057]Moreover, according to another possible
embodiment, not shown, the brassiere according to the
10 invention comprises a reinforcing layer applied along
the whole surface of each cup, between a lower portion
and side portions thereof. Where appropriate, provision
may be made for different thicknesses of the material,
for example greater along the side and lower portions.

[0058]According to a further possible embodiment,
15 not shown, the further layers suitable for being applied
along at least an edge portion of the brassiere comprise
materials different from the one which forms the
reinforcing means, to obtain different properties in the
20 various portions of the brassiere.

[0059]According to a further embodiment, not shown,
the side bands are suitable for connecting to each other
in that they are stitched together or made in one piece
from the same fabric to obtain a sports style brassiere.

[0060]A further embodiment also provides for the
25

reinforcing means to comprise supporting elements, such as wires, suitable for being applied to the edges of the cups. In particular, the support elements are suitable for being applied to the edges of the cups by sheaths
5 welded to the reinforcing layer preferably by melting it.

[0061] For a person skilled in the art, it will be possible to make numerous modifications and adaptations to the preferred form of the embodiments of the
10 brassiere described above and to replace components with other functionally equivalent ones, in order to meet incidental and specific requirements, without thereby departing from the scope of the following claims.

CLAIMS

1. A brassiere (10) having a pair of cups (12) of fabric connected to each other and two side bands (14) that extend from the cups and are suitable for connecting to each other, comprising reinforcing means having at least one layer (16) of chemical material suitable for being applied along at least an edge portion of the pair of cups and for forming an integral part of the fabric.
2. The brassiere according to claim 1, in which said layer (16) comprises at least one thermoplastic component suitable for retaining the properties of melting and resolidifying each time it is heated and cooled without impairing its physical characteristics.
3. The brassiere according to claim 2, in which said thermoplastic component comprises a polyurethane mix.
4. The brassiere according to claim 1, in which said layer (16) comprises at least one elastic component.
5. The brassiere according to claim 4, in which said at least one elastic component comprises a silicone mix.
6. The brassiere according to one of the preceding claims, in which said layer (16) comprises

pigments and/or cosmetic elements.

7. The brassiere according to one of the preceding claims, in which said layer (16) is applied at least along a side portion (18) of each of said pair of cups (12), wherein said side portion (18) faces towards the respective band (14) forming an integral part of the fabric.

8. The brassiere according to claim 7, in which said layer (16) is applied along said side portion (18) of each of said pair of cups (12) and extends with no break in continuity at least as far as the point of connection to a shoulder strap (20), wrapping around the respective cup at the side.

9. The brassiere according to one of the preceding claims, in which said layer (16) is applied at least along a lower portion (22) of each of said pair of cups (12) forming an integral part of the fabric.

10. The brassiere according to claim 9 when depending on claim 7, in which said layer (16) is applied along said lower portion (22) of each cup (12) and extends with no break in continuity into said side portion (18), wrapping around the respective cup (12) at the bottom and at the side.

11. The brassiere according to claim 10, in which said layer (16) is applied along said lower portion (22)

and said side portion (18) of each of said pair of cups (12) and extends with no break in continuity at least as far as the point of connection to a shoulder strap (20), wrapping around the respective cup at the side.

5 12. The brassiere according to one of claims 9 to 11, in which, with no break in continuity, said layer (16) wraps around the pair of cups (12) meeting in said lower portion (22) between the pair of cups.

10 13. The brassiere according to claim 12, in which said layer (16) meets in said lower portion (22) between said pair of cups (12) extending slightly towards an upper portion of the brassiere and widening towards the sides in the portion between said pair of cups (12).

15 14. The brassiere according to claim 9 when depending on claim 7, in which said side portions (18) of said layer (16) have a greater width than said lower portions (22) of said layer (16).

20 15. The brassiere according to claim 14, in which the width of said layer (16) decreases gradually and continuously from said side portions (18) to said lower portions (22) of said layer (16).

25 16. The brassiere according to one of the preceding claims, in which said layer (16) is applied along the whole surface of each of said pair of cups (12), between a lower portion (22) and side portions

(18) of the cups.

17. The brassiere according to one of the preceding claims, in which there are also provided a further layer (26) of chemical material suitable for
5 being applied along at least an edge portion of the brassiere (10) and for forming an integral part of the fabric.

18. The brassiere according to claim 17 when depending on claim 9, in which said further layer (26)
10 is applied along at least a lower edge portion (28) of the brassiere and for at least part of the length is fused with said lower portion (22) of said layer (16).

19. The brassiere according to claim 17 when depending on claim 7, in which said further layer (26)
15 is applied along at least an upper edge portion (30) of the side bands (14) and, for at least part of the length, is fused with said side portion (18) of said layer (16).

20. The brassiere according to claim 17 when
20 depending on claim 10, in which said further layer (26) is applied along at least an upper edge portion (32) of the brassiere and, at least for the end areas, is fused with said side portion (18) and with said lower portion (22) of said layer (16).

25 21. The brassiere according to one of claims 17 to

20, in which said further layer (26) of chemical material suitable for being applied along at least an edge portion of the brassiere has a smaller width than said layer (16).

5 22. The brassiere according to one of claims 17 to 21, in which said further layer (26) is suitable for being applied along at least an edge portion of the brassiere and comprises the same material as said layer (16).

10 23. The brassiere according to one of the preceding claims in which there are also provided shoulder straps (20), said reinforcing means comprising at least one layer of chemical material suitable for being applied along at least a portion of said shoulder
15 straps (20) of the brassiere and for forming an integral part of the fabric.

24. The brassiere according to claim 23 when depending on claim 7, in which said layer of chemical material extends continuously along at least a portion
20 of said shoulder straps (20) and along said side portion (18) of each of said pair of cups (12) which faces towards the respective band, forming an integral part of the fabric.

25 25. The brassiere according to claim 24, in which said layer of chemical material applied to said shoulder

straps (20) has a smaller width than the layer applied to said side portion (18) which faces towards the respective band (14).

26. The brassiere according to claim 23 when
5 depending on claim 10, in which said layer (16) is applied along said lower portion (22) of each of said pair of cups (12) and extends with no break in continuity into said side portion (18) continuing along said shoulder straps (20), wrapping around the
10 respective cup (12) at the bottom and at the side and supporting it at the top.

27. The brassiere according to one of claims 23 to 26, in which said shoulder straps (20) are produced separately from the brassiere and applied to it by
15 melting said layer (16).

28. The brassiere according to one of claims 23 to 26, in which said shoulder straps (20) are made in one piece with the brassiere.

29. The brassiere according to one of the
20 preceding claims, in which said layer (16) is printed onto the fabric.

30. The brassiere according to claim 29, in which said layer (16) is applied to the fabric by a screen printing process.

25 31. The brassiere according to claim 29, in which

said layer (16) is applied to the fabric by a cylinder printing process.

32. The brassiere according to one of the preceding claims, in which said layer (16) is applied in
5 a uniform thickness.

33. The brassiere according to one of claims 1 to 31, in which said layer (16) is applied in different thicknesses to different portions depending on the strength to be produced.

10 34. The brassiere according to one of the preceding claims, in which said layer (16) comprises at least two sub-layers.

35. The brassiere according to one of claims 17 to 22, in which the side bands (14) comprise fastenings
15 attached to the ends of the side bands by partially melting said further layer (26) of chemical material.

36. The brassiere according to one of the preceding claims, in which said reinforcing means also comprise support elements suitable for being applied to
20 the edges of said pair of cups (12).

37. The brassiere according to claim 35, in which said support elements are suitable for being applied to the edge of said pair of cups by sheaths welded to said layer (16) by melting said layer (16).

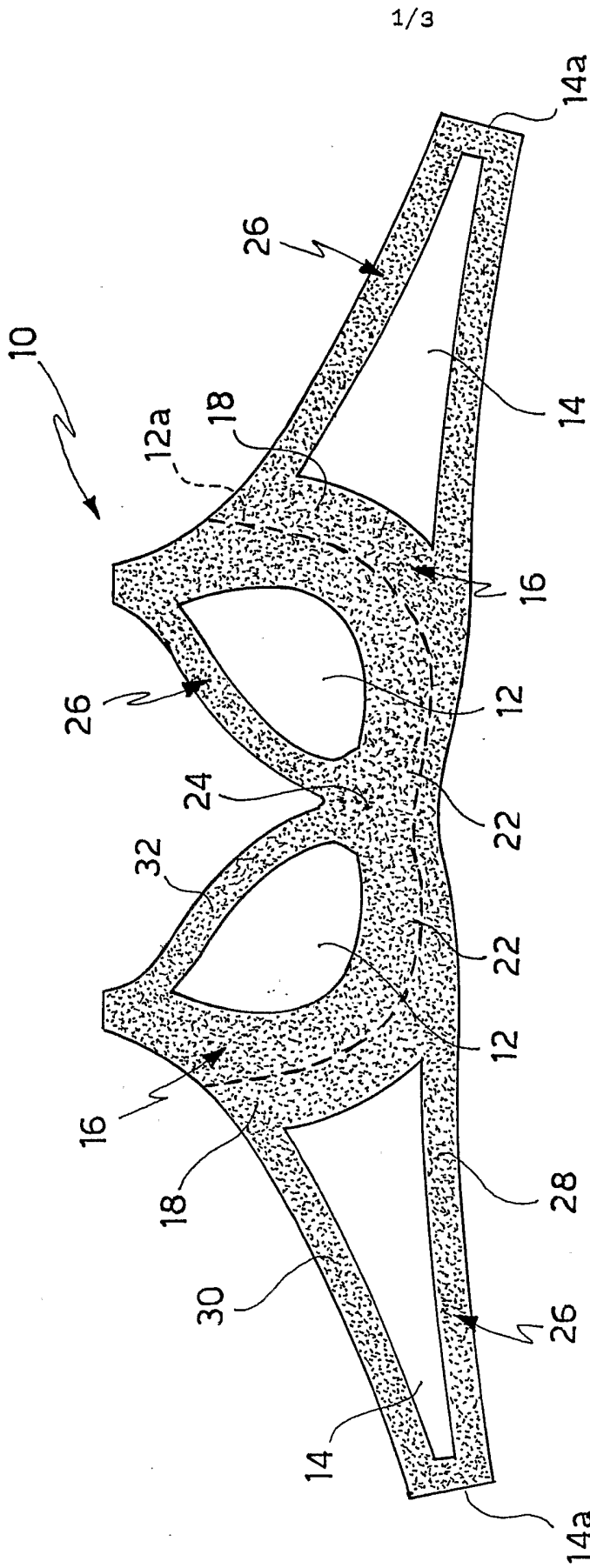


FIG. 1

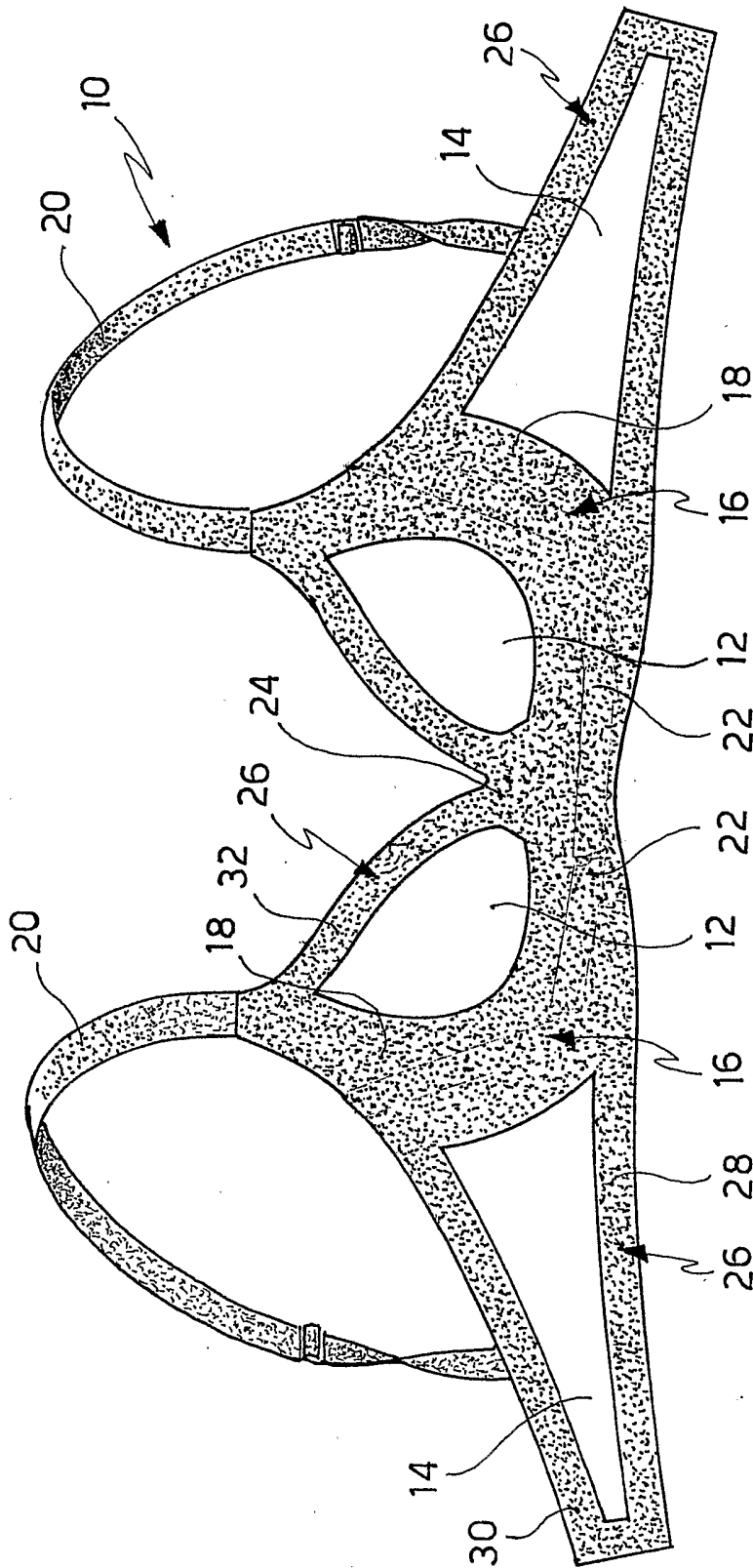


FIG. 3

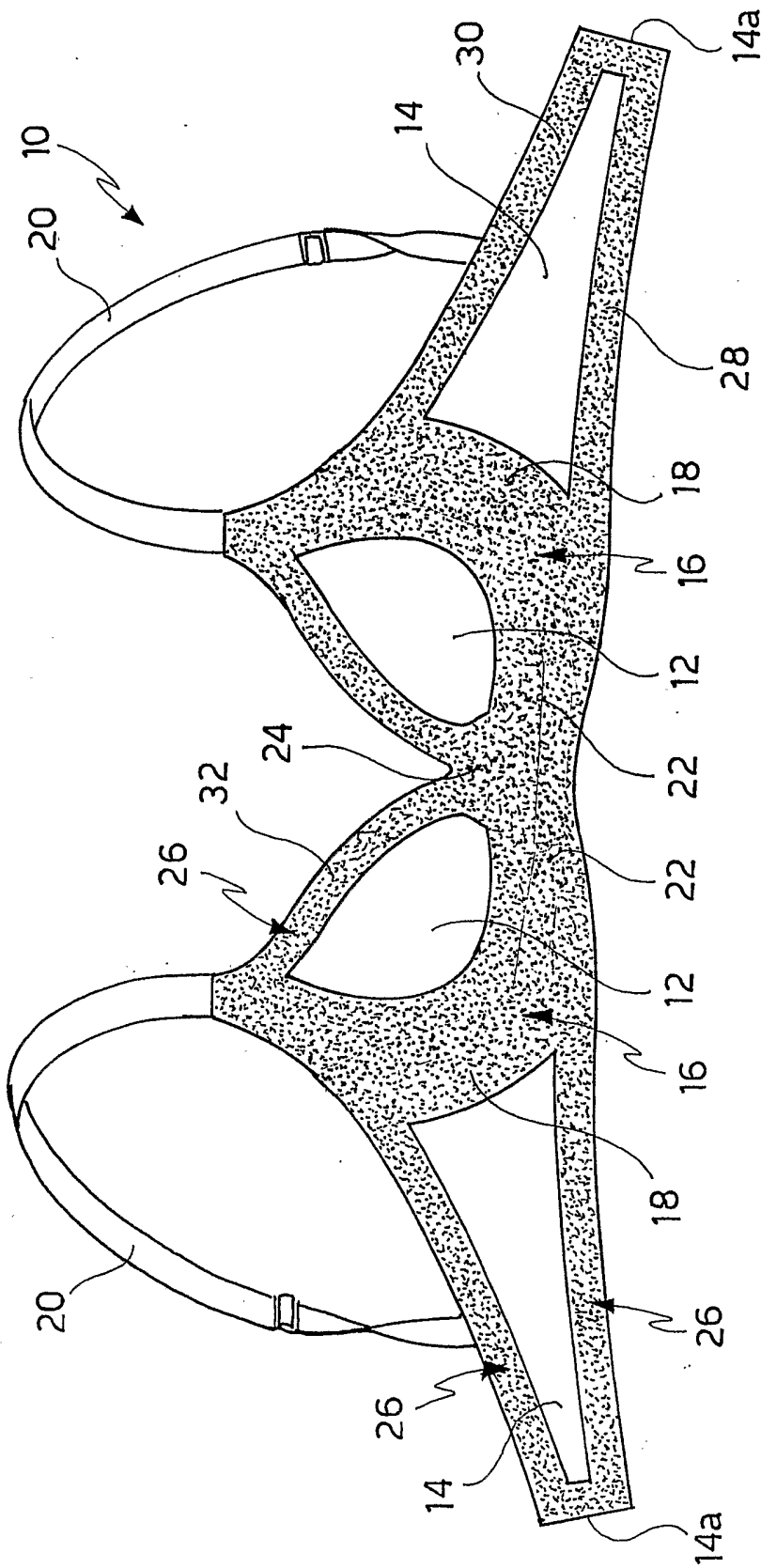


FIG. 2

INTERNATIONAL SEARCH REPORT

Int. Application No
PCT/IB 02/05147

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A41C3/10 A41C5/00

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)
IPC 7 A41C

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

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 852 915 A (SALTEK S R L) 15 July 1998 (1998-07-15) column 1, line 10 - line 12 column 1, line 15 - line 22 column 1, line 29 column 1, line 34 - line 35 column 1, line 48 - line 54	1,7-16, 32,36,37
Y	column 3, line 30 - line 35; figure 2	2-4, 17-23, 28-30, 33,34

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° 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
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- "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
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Date of the actual completion of the international search

3 September 2003

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Monné, E

INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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