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(54) **Procedure for the manufacture of a monopiece underwear or swimsuit and product obtained**

(57) It includes the following phases of manufacture:
 in a first phase an elastic film (1) is cut, in flat, the shape
 (2) of the referred monopiece clothing, by means of an

automatic cutter or die, in a second phase the closing
 means (3) are joined to the clothing, in a third phase the
 defective clothing are discarded, and in a fourth phase
 the cups of the perfect clothing are molded (4).

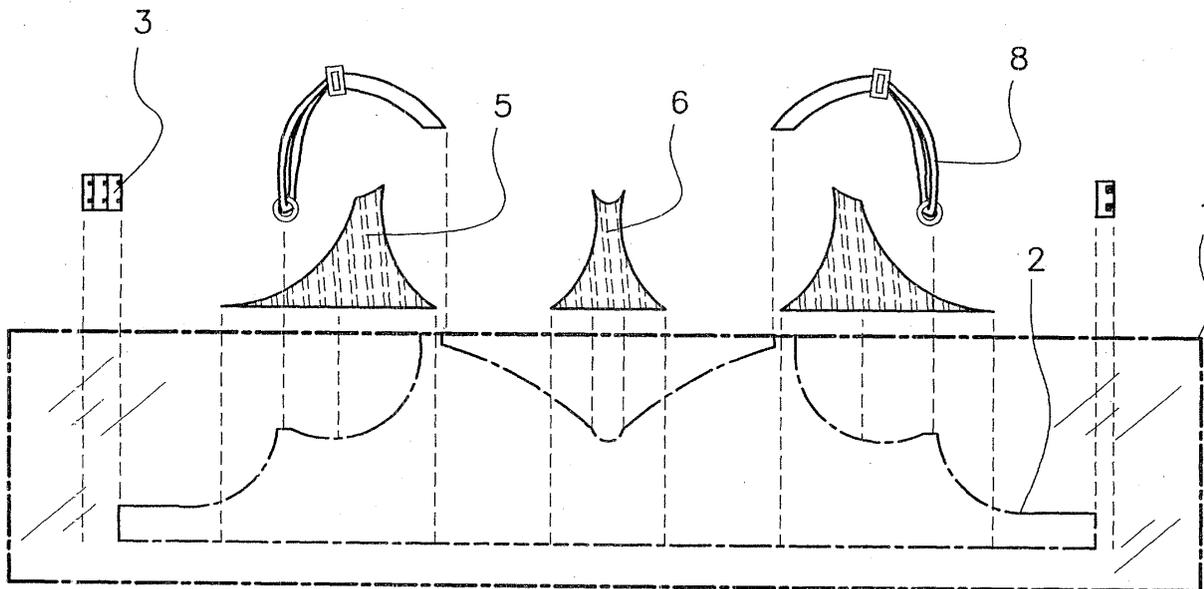


FIG. 1

Description

[0001] Procedure for the manufacture of a monopiece underwear or swimsuit and product obtained that includes the following phases of manufacture: in a first phase an elastic film is cut, in flat, the shape of the referred monopiece clothing, by means of an automatic cutter or die, in a second phase the closing means are joined to the clothing, in a third phase the defective clothing are discarded, and in a fourth phase the cups of the perfect clothing are molded.

BACKGROUNDS OF THE INVENTION

[0002] It is known in the state of the art different patents that describe transparent brassieres and different procedures for the manufacture of said transparent brassieres.

[0003] Thus, it is known the Spanish Utility Model No. 200300174 (1053927), of MANUFACTURAS TELENO, S.L., of 2003, that refers to a feminine brassiere with detachable sticky fixation, that is characterized in that on the lateral parts of the breasts, corresponding to the body of the same brassiere, are joined the respective individual transparent bands of remarkable width and short length, being positioned under the user's armpits, having been foreseen that on the surface of the internal face of these straps can be joined, with detachable interchangeable character, the respective portions, transparents and glued by both faces, being fixated each portion to the respective strap by means of the adhesive of one of faces of that one whereas the adhesive of the other face establishes fixation means on the body of the user.

[0004] Also it is known the British Patent n° GB1447533 "Improved brassiere", of year 1974, in the name of INT. INC. PLAYTEX, that refers to a body of yarn e.g. a complete yarn package rendered waste by damage or unsatisfactory spinning, is stripped from a core on which it is wound by cutting a longitudinal notch in the body, using a rotary cutter and to a depth just, say one-sixteenth of an inch, short of the core surface, and then severing the remanent uncut turns of yarn along the apex of the notch e.g. in the case of thermoplastic yarn, by a directed jet of hot fluid such as air. In the device shown, a bobbin of yarn is automatically positioned on a table located by a spigot engaging the tube, and secured by pressure of a head of a hydraulic ram on one end. An annular (or partially annular) blade carried on an inverted dished support is rotated and moved (in a cutting and a return stroke) relatively to and axially and (if necessitated by the contour of the bobbin) laterally of the bobbin by a pneumatic (or hydraulic) piston and cylinder mechanism (not shown) so that it cuts a notch. Provision is made for the change in direction of the surface of the bobbin e.g. from the frustoconical portion to the cylindrical portion, by altering the alignment of the piston and cylinder by means of a cam in response to a

limit switch (not shown) actuated when the blade-support reaches an appropriate position relative to the changing bobbin surface.

[0005] In the state of the art there is the French Patent n° 2808972, in the name of DIM, S.A., "CLOTHING OF LINGERIE IN TEXTILE ELASTIQUE To BORDURE ELASTIQUE, ET COMES FROM FABRICATION", that refers to an undergarment, is made from a basic elastic textile fabric with at least some of its edges covered with a layer of an elastomer material partially embedded in the textile fabric. An undergarment, such as a pair of pants, is made from a basic elastic textile fabric with at least some of its edges covered with a layer of an elastomer material partially embedded in the textile fabric.

The elastomer material has a stretch capacity of at least 100 per cent, is preferably non-adhesive and can be transparent or colored. It is in the form of a strip at least 3 cm wide, applied in cold paste form by means of a cartridge, silk screen printing, by hand or machine to the outer surface of the textile fabric and then reticulated.

[0006] Also it is know the German Patent DE4013744, of the year 1990, that consists of Material for protective clothing, esp. for sea rescue suits for pilots, has a microporous, transparent and water vapour-permeable polyurethane (PU) layer and an absorber layer; the novelty is that PU layer is attached to a first textile fabric which forms an outer covering of the suit, and layer is attached to a second textile fabric which forms an inner envelope; PU layer is permeable to air and is on the inside of fabric layer, facing inner envelope, and layer is on the inside of fabric layer, facing outer' cover. Preferably inner envelope and outer covering are removably joined together with connecting elements, pref. made of Velcro (RTM); outer cover is antistatic and/or oil- and/or water-repellent, and inner envelope is fire-resistant cotton fabric; absorber layer is covered with a tricot material; layers inner envelope and outer covering are made separately, and the seams in the outer layer are sealed on the inside with sealing elements, pref. welded strips of polyurethane.

[0007] British Patent n° 2376171, "BRASSIERE WITH TRANSPARENT STRAPS", of year 2001, describes brassiere for use with a backless, strapless or halter-neck dress has cups held together by a clasp at the front and a back strap which is of transparent material, e.g. an elastomeric polyurethane. Shoulder straps may also be transparent and may be detachable. The cups may also be transparent. The clasp may comprise a male member with a stud insertable at an inclination into a female member of partly cut-away cylindrical form and secured together by rotation.

[0008] In the year 2000, the same applicant filed the Spanish Utility Model No. 200002261 (1049150), now granted, that it refers to a strap, of the type used for clothing, in special underclothing and bathing suits, that at least a band and a loop, with the technical characteristic of being transparent in at least a section of said band and in that in the referred transparent section has

incorporated at least a motif.

[0009] Finally, it is necessary to mention the US Patent No. 2391959 "SUN BATHING APPAREL", of year 1944. It describes a sunbathing apparel made of thin, flexible, translucent, thermoplastic sheets containing ultraviolet light filtering agents, said apparel being opaque to visible radiations and permitting the pigmentation range of ultraviolet radiations to pass while effectively suppressing the erythema range, and enabling the wearer of the apparel to acquire a suntan without sunburn on the parts of the body covered by the apparel.

BRIEF DESCRIPTION OF THE PATENT APPLICATION

[0010] The present invention is a great advance in the sector of the manufacture of clothing, since it reduces the manufacture costs, because it saves in material, or because the manufacture processes are reduced, at the same time that is increased the user's comfort since the seams are reduced to the minimum.

[0011] Thus, the inventor has observed that, by means of the procedure object of the present invention, is conferred to the product greater resistance, because it is monopiece.

[0012] In order to proceed with said manufacture, in a first phase an elastic film is cut by means of an automatic cutter or die, in flat, the shape of the referred monopiece clothing.

[0013] The fact that the clothing is cut monopiece confers greater resistance to the clothing and greater comfort to the user, because there are neither seams nor edges that nail in the skin of the user who dresses the clothing.

[0014] In a second phase the closing means are joined to the clothing, and in a third phase the defective clothing are discarded.

[0015] When discarding said clothing before the molded phase, the production costs are reduced a lot. As it is known, one of the most important costs of manufacture is the molded costs of the clothing. At the present time, unfortunately, after it is made this molded phase the defective clothing cannot be discarded, then this fact increases price of the final product, because it is necessary to discard those defective clothing, but after they have been molded.

[0016] In the procedure object of the present patent, as the molded phase is the last one, those clothing that do not accomplish the quality standards are discarded and they do not mold, reason why the production costs are lower.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] With the purpose to facilitate the explanation four sheets of drawings are attached to the present description, in which a practical case of an embodiment has been reproduced, which is mentioned only for ex-

emplificative, non limitative of the scope of the present invention:

- figure 1 shows an exploded view of the brassiere before the reinforcements and cups are cut,
- figure 2 represents another view of the brassiere in the version of back reinforcements and joined cups finished,
- figure 3 represents another view of the brassiere in the version of back reinforcements, joined cups and outline finished,
- figure 4 is a view of the brassiere in user's body.

CONCRETE EMBODIMENT OF THE PATENT APPLICATION

[0018] Thus in figure 1 it is shown an elastic film 1, a shape 2 of a clothing to be cut, closing means 3, reinforcements 5, 6, 7 and straps 8.

[0019] In figure 2 it has been represented the clothing with reinforcements 5, 6, backs 9, the closing means 3 and molded cups 4.

[0020] In figure 3 identical elements as the ones of figure 2 have been shown, in addition than the lower reinforcements 7.

[0021] Figure 4 is the view of the clothing already manufactured in the body of the user.

[0022] Thus in the concrete embodiment in a first phase an elastic film 1 is cut, in flat, the shape 2 of the referred monopiece clothing, by means of an automatic cutter or die (not shown in the drawings).

[0023] In a second phase the closing means 3, for example, and without excluding fasteners, hooks, clasps, closings, etc., are joined to the clothing.

[0024] In a third phase the defective clothing are discarded, defective as a result of the cut, or the joint of closing means.

[0025] Finally in a fourth phase cups 4 are molded, from those clothing considered perfect, that as being this one the most expensive procedure, it is made the last one, and in this way those clothing that are discarded because they are defective, are not molded.

[0026] Thus between the first and second phase or between the second and the third phase, reinforcements 5, 6, 7 are cut to be joined later to the zone of the clothing to be reinforced for example, backs 9, or where both cups join 4, or in the outline.

[0027] For visual effect purposes, reinforcements 5, 6, 7 can be made of an identical or similar material to the one of the clothing and so will not change the general impression of the clothing.

[0028] The mentioned film 1 can be transparent and transpirable, at least partially, so it gives a greater comfort to the user and allows her to take transparent clothing without it can be seen. Reinforcements 5, 6, 7 will be made of the same material as the rest of clothing.

[0029] As it is shown in the drawings it is possible to include straps 8, also transparents or of the same ma-

terial or similar to the one of the clothing, or it is possible that clothing is strapless.

[0030] For those users that want it or that have inconveniences to wear clothing that are not made of fabric or non woven, it is possible that a fabric layer or non woven layer is joined in at least one of the faces of the film 1, the one that would be in contact to the user's skin or the one is in the outer, or both at the same time. This fabric or non woven, depending on the case, can be with a certain grade of transparency, or translucent, or simply opaque.

[0031] The present patent of invention describes a new procedure for the manufacture of a monopiece underwear or swimsuit and product obtained. The examples mentioned here are not limitatives of the present invention, for that reason it will be able to have different applications and/or be adapted, all of them within the scope of the following claims.

Claims

1. Procedure for the manufacture of a monopiece underwear or swimsuit **characterized in that** includes the following phases of manufacture:
 - in a first phase an elastic film (1) is cut, in flat, the shape (2) of the referred monopiece clothing, by means of an automatic cutter or die,
 - in a second phase the closing means (3) are joined to the clothing,
 - in a third phase the defective clothing are discarded, and
 - in a fourth phase the cups of the perfect clothing are molded (4).
2. Procedure in accordance with claim 1 **characterized in that** between the first and the second phase or between the second and the third phase, reinforcements (5, 6, 7) are cut to be joined later to the zone of the clothing to be reinforced.
3. Procedure in accordance with claim 2 **characterized in that** the reinforcements (5, 6, 7) are made in an identical or similar material to the one of the clothing.
4. Procedure in accordance with at least one of the previous claims **characterized in that** the mentioned film (1) is transparent and transpirable, at least partially.
5. Underclothing or bathing suit that comprises cups (4), backs (9), a central area where both cups join and closing means (3), **characterized in that** said clothing is monopiece, by means of a film (1), elastic and transpirable, and with the molded cups (4).
6. Underclothing or bathing suit in accordance with claim 5 **characterized in that** the referred film (1) is transparent.
7. Underclothing or bathing suit in accordance with claim 5 or 6 **characterized in that** includes reinforcements (5, 6, 7) and said reinforcements are made of an identical or similar material to the one of the clothing.
8. Underclothing or bathing suit in accordance with at least one of the claims from 5 to 7 **characterized in that** a fabric layer or non woven layer has been joined in at least one of the faces of the film (1), the one that would be in contact to the user's skin or the one is in the outer, or both at the same time.

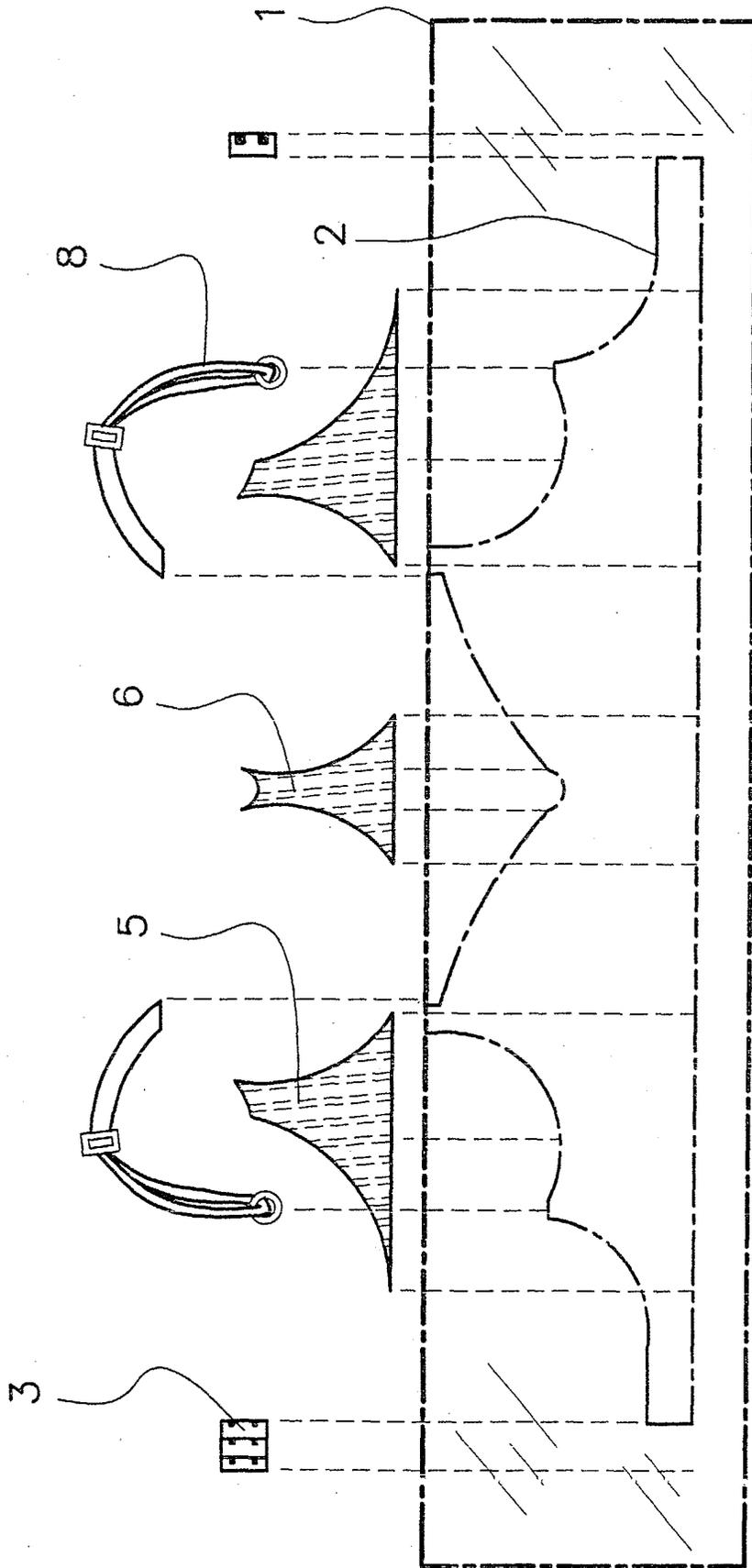
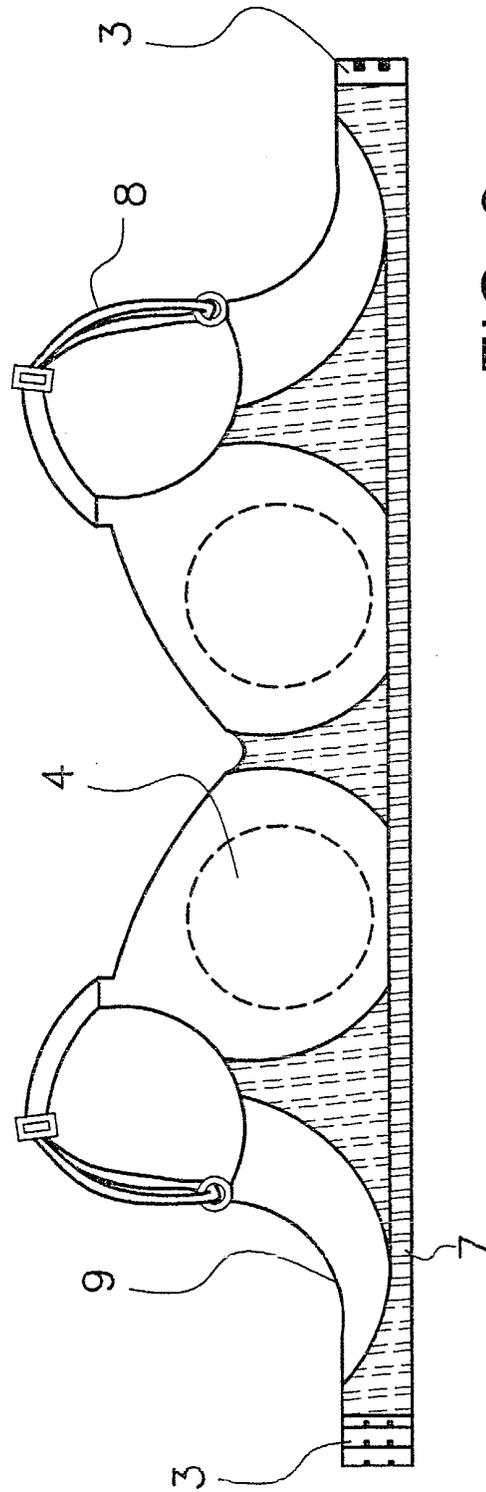
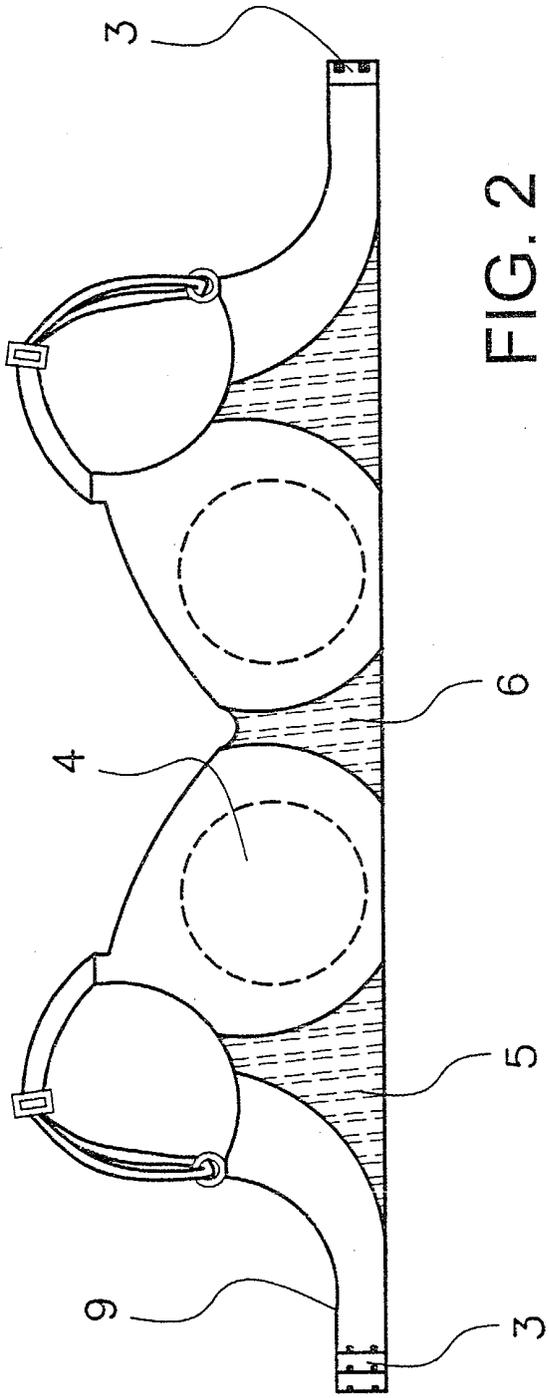


FIG. 1



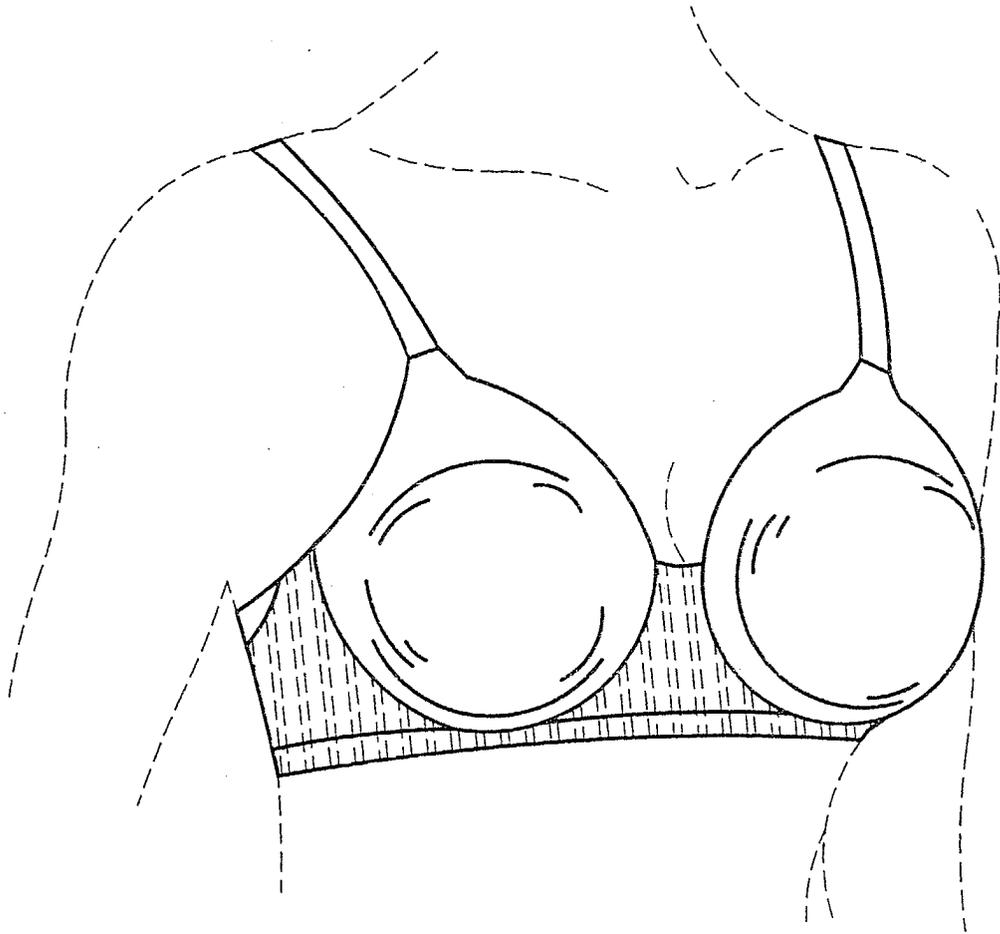


FIG. 4



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	WO 03/059098 A (PLAYTEX APPAREL, INC; QUERQUANT, PIERRE-JEAN) 24 July 2003 (2003-07-24) * page 2, line 31 - page 9, line 23; figures 1-3 *	1-8	A41C3/00
X	----- US 2002/106970 A1 (FALLA GLORIA) 8 August 2002 (2002-08-08) * paragraph [0039] - paragraph [0148]; figures 1-16 *	1-3,5,7, 8	
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P,X	----- WO 2004/002248 A (SARA LEE CORPORATION) 8 January 2004 (2004-01-08) * paragraph [0014] - paragraph [0031]; figures 1-4 *	1-8	
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X	* page 4, line 10 - page 6, line 11 *	5,7,8	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 10 February 2005	Examiner Herry-Martin, D
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 03/02 (P04C01)

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

EP 04 38 0226

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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