

## **Concave Brassiere Cup Structure**

### **BACKGROUND OF THE INVENTION**

#### **1) FIELD OF THE INVENTION**

The invention herein relates to a concave brassiere cup structure that is  
5 utilized as a breast undergarment for women in which the interior section of the  
cup is articulated into concavity such that production cost is reduced, while  
aeration and breathability as well as brassiere structural strength is effectively  
enhanced by the original brassiere cup arrangement of the present invention.

#### **2) DESCRIPTION OF THE PRIOR ART**

10 Brassieres are garments that women wear directly against the body and in an  
environment where the quality of life is on the ascent everywhere, since brassiere  
products are becoming exquisite beyond description, there has been a proportional  
increase in the consumer demand for brassiere quality and comfort. For brassiere  
products, the most direct influence on consumer wearing quality and comfort has to  
15 do with the best fitting brassiere cup. As a result, brassiere cup structure and design  
is a most important topic in that it affects market competitiveness.

However, the brassiere cups often observed on the market today can be  
generally categorized into floss wad cups or foam cups (i.e., seamless cups),

wherein since the foam brassiere cups are of one-piece construction for greater firmness and a more attractive appearance, they have been well-received by the consumer market and favored by women. Furthermore, in order to satisfy the female demand for size, firmness, and attractiveness, undergarment manufacturers are eagerly pursuing designs in which the brassiere cups have a greater lower edge thickness such that after the undergarment of thicker design is worn on the breasts, the bust becomes higher and fuller due to the convergence. However, foam brassiere cups that adopt thick undergarment designs require an increase in foam raw materials thickness such that given high pressure, high heat mechanical and molding conditions as well as the fabrication of brassiere cups according to shape and thick/thin dimension requirements, such structures result in the following drawbacks:

(1) Foam raw materials cost is greatly escalated. Since the brassiere cups are to be of an increased thickness undergarment design, the thickness of the foam utilized must at minimum be as thick as the augmented thickness of the thicker undergarment. However, since thickness is the unit of calculation of foam raw material, the unit price rises in direct proportion with foam thickness, the main reason why the cost of thicker foam brassieres is always higher, which is a drawback.

(2) If brassiere cups designed as an increased thickness undergarment are of excessive thickness, problems of difficult aeration and heat dissipation develop at the areas of increased thickness of the cups and, furthermore, there is a proportionate increase in density along other areas of the cups such that the  
5      breathability of the cups is significantly lowered, which is a second drawback.

Therefore, in view of the said situation, the applicant of the invention herein felt it necessary to improve upon the prior art such that it is more enterprisingly advanced and more economical. As such, the said applicant developed the brassiere cup structure of the invention herein which, following prototyping and  
10    testing, is submitted in application for patent rights.

## **SUMMARY OF THE INVENTION**

The primary objective of the invention herein is to provide a concave brassiere cup structure divided into a superficial ply and a subjacent ply, wherein a reinforcing planar frame having a suitable separation and thickness is disposed  
15    along the outer edge of the superficial ply such that a recessed surface is formed from the reinforcing planar frame towards the center of the cup; additionally, the superficial ply is rendered into a cup shape required to fit the human breast; the subjacent ply and the superficial ply are aligned and bonded, enabling the interior

section of the cup to become a concavity; as such, not only is materials purchasing cost effectively reduced, at the same time, the overall thickness of the cup interior section is decreased, enabling greater aeration and breathability as well as attractiveness, which is among the features of the present invention.

5           Another objective of the invention herein is to provide a concave brassiere cup structure in which a mesh ply is affixed to the inner surface of the superficial ply or to the inner surface of the subjacent ply, with the said mesh ply knitted of tetoron yarn into a vertically and horizontally interwoven openings; as such, the overall structure of the brassiere cup is even more resistant to deforming than that  
10 of the prior art and has a strengthened cup structure, thereby preventing the collapse and misshaping of the cup.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1 is an isometric and partially cross-sectional drawing of the invention herein.

15           Figure 2 is an exploded drawing of the invention herein.

Figure 3 is a cross-sectional drawing of FIG. 1, as viewed from the perspective of line A-A.

Figure 4 is an isometric, cross-sectional drawing of the internal structure of the brassiere cup invention herein.

Figure 5 is an isometric, cross-sectional drawing of the internal structure of another brassiere cup embodiment of the invention herein.

Figure 6 is a cross-sectional drawing of FIG. 5, as viewed from the perspective of line B–B.

## 5 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The detailed description of the preferred embodiments below are accompanied by the brief description of the drawings.

Referring to FIG. 1, FIG. 2, FIG. 3, and FIG. 4, the concave brassiere cup structure of the invention herein is a cup 1 comprised of a superficial ply 2 and a  
10 subjacent ply 3; before the shaping process, the superficial ply 2 is a foam material 4 having cloth 5 adhesively attached to its surface and the subjacent ply 3 is similarly a foam material 6 having cloth 7 bonded to its surface, the cloth-lined surfaces of the superficial ply 2 and the subjacent ply 3 are faced outward and aligned, and then shaped and fused together under the pressure and heat of a  
15 forming mold, wherein a reinforcing planar frame 8 protrudes from the outer edge of the superficial ply 2, with the thickness of the reinforcing planar frame 8 variable to suit requirements, and a recessed surface 9 is gradually formed from the reinforcing planar frame 8 towards the center of the cup 1 such that after the outer edges of the subjacent ply 3 and the superficial ply 2 are aligned and bonded, the

interior section of the cup 1 becomes a concavity and, furthermore, since the dishing of the cup 1 interior section diminishes the actual structural thickness of the interior section, the materials-use purchase of thicker foam for fabrication is unnecessary, but can be changed to a thinner foam which is substituted for the  
5 thicker foam and the high material cost problem attributed to it, while also thereafter achieving additional softness and comfort for the wearer and, furthermore, more effective aeration and breathability.

Referring to FIG. 5 and FIG. 6, since the concavity constituted at the interior section of the cup 1 provides for breast support, to avert concern that  
10 insufficient strength could cause the deformation of the cup 1, the reinforcing planar frame 8 on outer edge of the superficial ply 2 is designed at a certain width such that the reinforcing planar frame 8 supplements the overall strength of the cup 1 to effectively prevent cup 1 deformation, while also serving as a lining that affords breast uplift. When a more elevated lining design is required for cup 1  
15 usage, a higher lining 13 can be formed along the lower edge of the cup 1 subjacent ply 3 to provide more prominent breast uplift and convergence.

Furthermore, referring to FIG. 4 and FIG. 6, to enable a specific elastic resiliency that maintains the structural integrity of the concavity at the interior section of the cup 1, a mesh ply 10 is affixed to the inner surface of the superficial  
20 ply 2 or to the inner surface of the subjacent ply 3, the said mesh ply 10 consisting

of integrated netting 11 and foam 12 that is securely fastened to the superficial ply 2 inner surface and the subjacent ply 3 inner surface such that when either or both the superficial ply 2 and the subjacent ply 3 of the cup 1 are subjected to external force, the said mesh ply 10 provides additional support that prevents the collapse and misshaping of the cup 1, wherein the said mesh ply 10 is knitted of tetoron yarn into a vertically and horizontally interwoven openings that can be round, square, rhombic, triangular, or polygonal.

In summation of the foregoing section, the invention herein is original and progressive, the said disclosure only describing the most preferred embodiments thereof and which shall not be construed as limitation of its scope. All modifications and adaptations based on the patent application claims of the invention herein shall remain protected under the patented claims of the present invention.

## CLAIMS

1. A concave brassiere cup structure comprised of a superficial ply and a subjacent ply, the major features of which are: A reinforcing planar frame protrudes from the outer edge of the said superficial ply and a recessed surface  
5 is gradually formed from the said reinforcing planar frame towards the center of the cup such that after the outer edges of the said subjacent ply and the said superficial ply are bonded, the interior section of the said cup becomes a concavity.
2. As mentioned in Claim 1 of the concave brassiere cup structure of the invention  
10 herein, affixed to the inner surface of the said superficial ply or to the inner surface of the said subjacent ply is a mesh ply, with the said mesh ply consisting of integrated netting and foam that is securely fastened to the said superficial ply inner surface and the said subjacent ply inner surface.
3. As mentioned in Claim 1 and Claim 2 of the concave brassiere cup structure of  
15 the invention herein, the said mesh ply is knitted of tetoron yarn into a vertically and horizontally interwoven openings.

4. As mentioned in Claim 3 of the concave brassiere cup structure of the invention herein, the said openings of the said mesh ply can be round, square, rhombic, triangular, or polygonal.