Sept. 3, 1968 E. FARON 3,399,678

FOUNDATION GARMENT

Filed June 23, 1966

Fig. 1

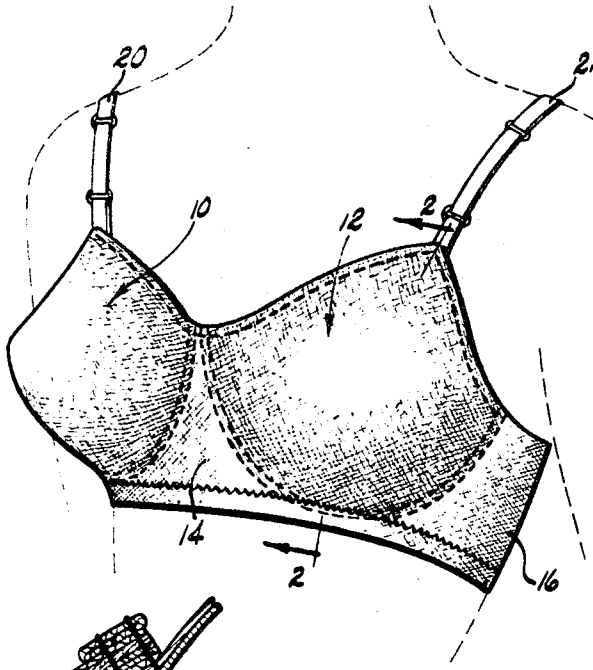


Fig. 2

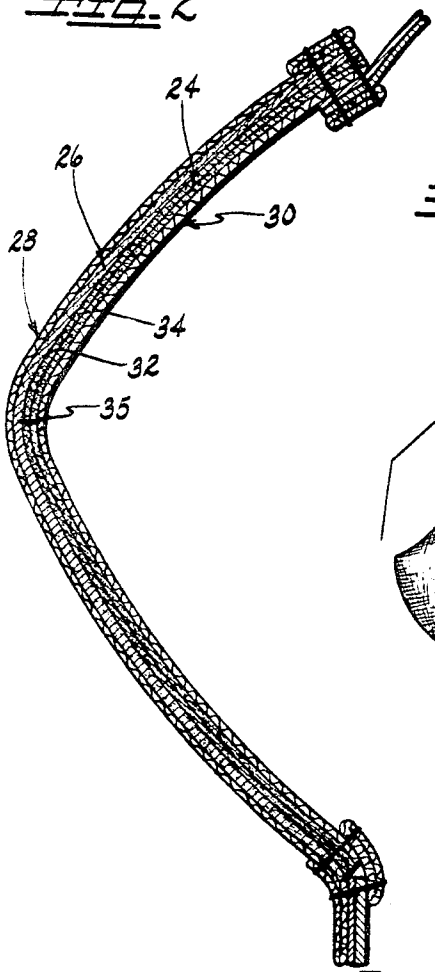


Fig. 3

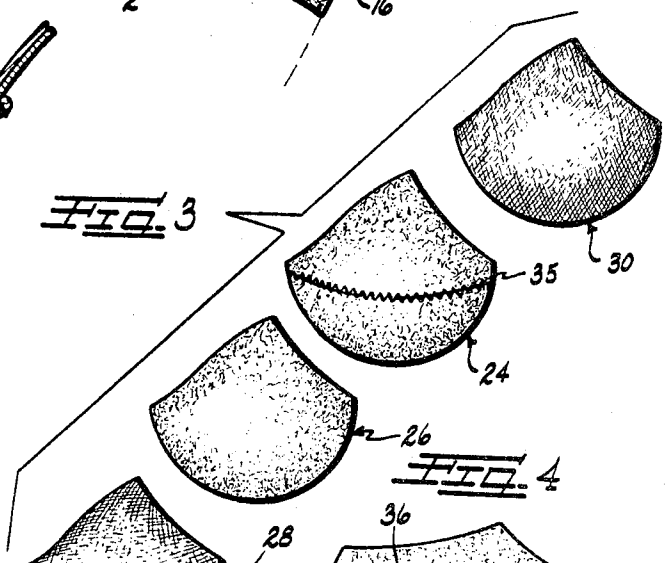
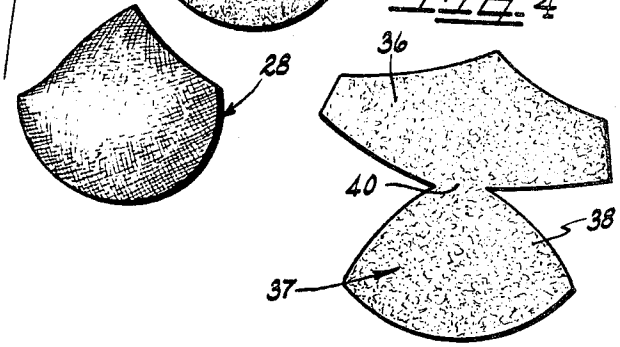


Fig. 4



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3,399,678

FOUNDATION GARMENT

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This invention relates generally to brassieres and, more particularly, to an improved breast cup construction.

While brassieres and other forms of foundation garments are a well-accepted means of controlling the shape and contours of the body, it is nevertheless desired by users that their presence be as inconspicuous as possible. Thus, it is desirable not only that the foundation garment itself not be exposed, but also that its presence not be evidenced by bulges and surface irregularities or by color variations observable through an outer garment.

Heretofore, it has been customary to fabricate brassiere breast cups from fabric segments which are darted or stitched to provide a permanent conical shape. This stitching, however, is evident through many forms of outer garment, particularly knit, sheer and semi-sheer fabrics, not only because of the increase in bulk in certain areas which causes minor surface irregularities, but also because surface irregularities in the foundation garment react differently to light and create noticeable optical variations.

Ideally, it would be desirable to eliminate all seams from breast cups. Although methods and apparatus for stretch forming fabric into a conical shape without seams have been devised, it has been found that fabrics so formed lose the shape imparted to them after repeated washing and use. As a practical matter, therefore, at least one layer of the cup is preferably formed in such a manner as to be capable of retaining its shape permanently.

The principal object of the present invention is to provide an improved brassiere construction. Another object of the invention is to provide a brassiere having a breast cup constructed so as to enable it to retain its shape but having no visible seams and a minimum of surface irregularities.

Other objects and advantages of the invention will become apparent from the following description when considered in connection with the accompanying drawings, in which:

FIGURE 1 is a perspective view of a brassiere as it appears on the body of a wearer, shown in phantom, and wherein various features of the invention are illustrated;

FIGURE 2 is a fragmentary sectional view taken along the line 2—2 of FIGURE 1;

FIGURE 3 is an exploded view of a breast cup of the brassiere of FIGURE 1 showing in perspective various of the layers of which it is constructed; and

FIGURE 4 is a plan view of one of the layers of FIGURE 3 as it appears before being formed into a conical shape.

The brassiere shown in the drawing includes spaced breast cups **10** and **12** which are of substantially like construction except that the cups are respectively of right and left hand cut. A triangular portion **14** joins the cups centrally of the chest of the wearer and interconnecting end portions **16** are provided which encircle the sides and back of the wearer. Shoulder straps **20** and **22** are provided substantially in accordance with common practice.

The breast cups **10** and **12** each embody a foundation layer **24**, which is darted and sewn to provide it with a permanent shape; a layer **26**, which overlies the outer surface of the foundation layer **24** and camouflages the stitching thereof; and outer and inner layers **28** and **30**, which are provided adjacent the inner surface of the foundation layer and the outer surface of the camouflaging layer respectively.

More specifically, the foundation layer **24**, like the remaining layers, is formed into a hollow cup of such a size and shape as will enable it to contain the breast while providing satisfactory support therefor. This shape is sometimes referred to herein as "conical" although it is to be understood that such a designation is not intended to be interpreted in a strict geometrical sense but only to connote a general shape or outline.

The function of the foundation layer is to provide its respective breast cup with a permanent shape which it will retain despite repeated laundering and handling. Hence, it is preferably formed of a material of relatively significant body. In a preferred embodiment, for example, the layer **24** is formed of a first sheet **32** (FIG. 2) to one surface of which a very thin second sheet **34** has been bonded. While various fabrics may be suitable for this layer, it has been found that a satisfactory first sheet is a synthetic, non-woven nylon fabric of relatively high density such as, for example, that sold under the trademark Pellon by the Pellon Corporation. A satisfactory second sheet, bonded to the first sheet, has been found to be a synthetic loosely knitted 40 denier nylon crepe tricot produced by Burlington Mills.

To insure that the foundation layer **24** will retain its shape, it is darted, i.e., formed by cutting a laminated sheet **37** into the shape shown in FIGURE 4, in which somewhat triangular pieces are removed from adjacent each side of the material, followed by a stitching of the material along the cut edges, as at **35** (FIG. 3). As noted in FIGURE 4, the removal of the triangular pieces forms a top segment **36** and a bottom segment **38** joined at their midportions **40**. In stitching the two segments together to form the cup, the stitching continues through the midportion **40** (FIG. 3) although it could be terminated at each side thereof if desired. It is understood, of course, that the segments **36** and **38** can be formed separately and need not be interconnected at their midportions as shown.

Attached to and overlying the outer surface of the foundation layer **24** is the camouflaging layer **26** which serves to conceal irregularities in the outer surface of the foundation layer such as are caused by the seam **35** joining the sections **36** and **38** of the foundation layer. The layer **26** is preferably spongy and relatively thick so that, although its inner surface is distorted or displaced by the seams, its outer surface remains smooth and regular. In a preferred embodiment, the camouflaging layer **26** is formed of a sheet of non-woven polyester fiber available under the trademark Kodel IV and manufactured by the Eastman Kodak Co. This particular fiber has special advantages for this use due to its improved whiteness and wrinkle resistance. Furthermore, a camouflaging layer **26** made of such a material in its spongy resilient form may easily be formed into the desired conical shape, as hereinafter set forth.

The camouflaging layer is preformed into a conical shape. This may be accomplished in various ways, as by depositing the fibers onto a conical mold. In any event, it is placed adjacent the outer surface of the foundation layer and effectively conceals the seam **35** thereof.

The outer layer **28** defines the outer surface of the breast cup and serves to provide the breast cup with a desired color and texture. Thus, it may be formed of a knitted fabric, a woven fabric, lace or marquisette. In a preferred embodiment, the outer layer is formed of a knitted, extensible, crimped synthetic yarn such as polypropylene.

The fabric of the outer layer is preferably formed and set under heat into a conical shape. It is secured adjacent the outer surface of the camouflaging layer in a manner hereinafter described.

In the illustrated embodiment, the inner layer **30** is also provided and serves to render the inner body-contacting surface of the cups soft and comfortable for the wearer. In a preferred embodiment, this layer is identical to the outer layer **28** and is formed in an identical manner. This layer **30** may, in certain instances, be eliminated if desired.

The layers **24**, **26**, **28** and **30** are secured together to provide the completed breast cup. This may be accomplished by stitching them together adjacent their peripheries and then subsequently stitching the cups to the central portion **14** and the straps **16**, **20** and **22** to form the completed garment. It has been found, however, that it is more efficient to bond the various layers together one by one by coating the layers successively adjacent their peripheries with a bonding agent such as a rubber based cement. The cement retains the layers in cup form for subsequent trimming and shaping of their edges and until they have been sewn into the completed garment.

It may be seen that an improved breast cup is provided in which the surface irregularities and variations in color and thickness of a foundation form-defining layer are effectively camouflaged.

It should be clear that various changes and modifications may be made in the above-described breast cup and brassiere without departing from the scope of the invention.

Various features of the invention are set forth in the accompanying claims.

What is claimed is:

1. A breast cup construction comprising a foundation layer formed of a fabric sheet having sufficient stiffness to maintain a desired shape, said layer including at least two segments stitched together along seams to provide it with a conical shape, a seamless intermediate layer attached to said foundation layer and overlying the outer surface thereof, said intermediate layer having a thickness and deformability sufficient to conceal the seams of said foundation layer, and a seamless outer layer attached to said foundation layer and overlying the outer surface of said intermediate layer.

2. A breast cup construction according to claim **1** wherein said intermediate layer is attached to said foundation layer and said outer layer only adjacent the periphery of the breast cup.

3. A breast cup construction according to claim **1** wherein said intermediate layer and said foundation layer have substantially the same shape so that said layers are contiguous.

4. A breast cup construction according to claim **1** wherein said intermediate layer is preformed into a cup shape.

5. A breast cup construction according to claim **1** wherein said outer layer is preformed into a cup shape.

6. A breast cup construction according to claim **1** wherein said intermediate layer is a nonwoven fabric formed of a foamy polyester fiber.

7. A breast cup construction according to claim **1** wherein a thin fabric sheet is bonded to the convex surface of said foundation layer.

8. A method of forming a brassiere breast cup comprising providing a first conical layer for said cup by darting and stitching a relatively stiff fabric, placing a second layer preformed into a conical shape adjacent the convex surface of said first layer, said second layer being formed of a spongy non-woven fabric capable of camouflaging the seam of said first layer, placing a third layer preformed into a conical shape adjacent the convex surface of said second layer, and securing the layers to one another adjacent their peripheries

9. A method according to claim **8** wherein layers of said breast cup are secured together adjacent their edges by bonding.

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