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ELEMENT OF APPAREL AND METHOD OF MAKING THE SAME

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FIG. 1.

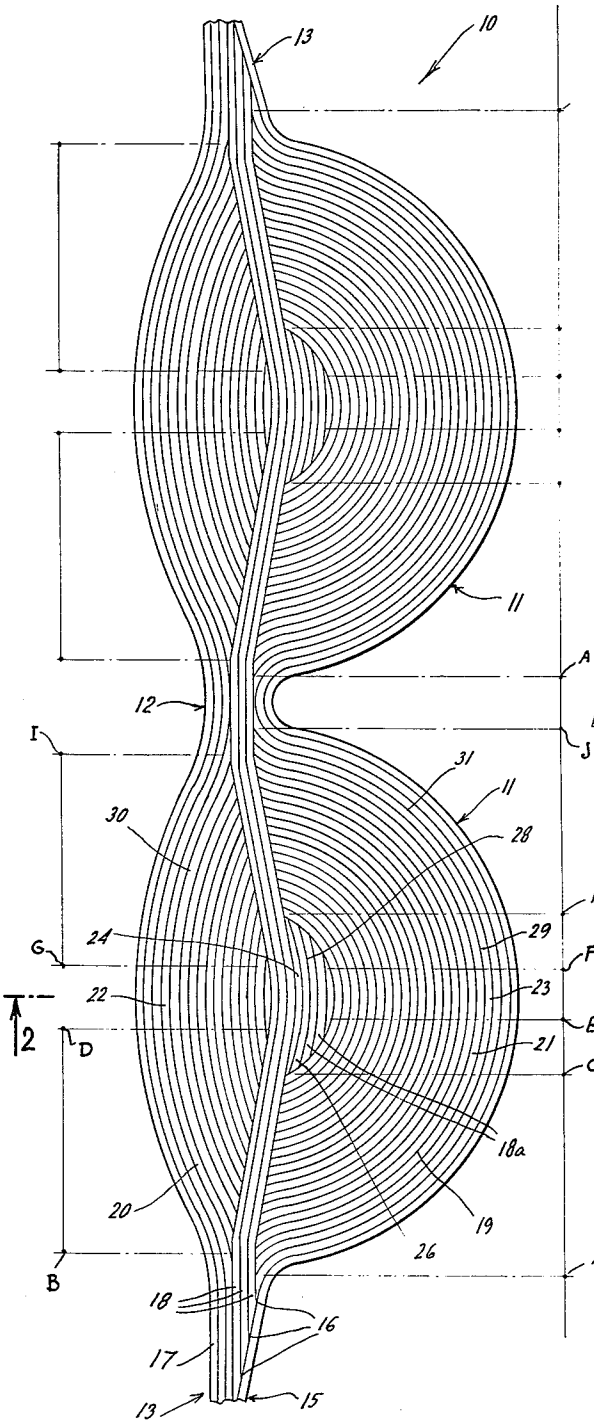
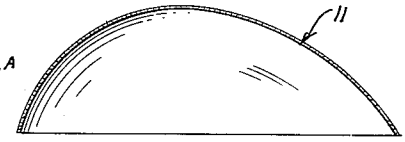


FIG. 2.



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ELEMENT OF APPAREL AND METHOD OF MAKING THE SAME

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This invention relates generally to apparel, as is especially concerned with an element of apparel adapted to be employed as a bust cup, or as a brassiere, or to be incorporated in any of the various garments having a bust receiving portion. The instant invention also embraces a novel method of manufacturing the subject device.

While the method and device of the present invention have been primarily developed and employed in the production of brassieres, it is understood that the inventive features thereof are capable of wide and varied usage, as indicated above, all of which applications are intended to be comprehended herein.

It has in the past been attempted to manufacture brassieres, bust cups, and the like as integrally knit units capable of automatic and continuous production by full fashion hosiery machinery. However, this result has not hereintofore been satisfactorily accomplished, any such attempt producing an article requiring one or more substantial operations subsequent to the knitting.

Accordingly, it is one object of the present invention to provide a brassiere or bust cup and method of manufacturing the same wherein the device is capable of substantially complete and continuous automatic production on conventional full fashion hosiery machines.

It is another object of the present invention to provide a brassiere or bust cup construction of the type described which affords comfortable and attractive support to a wearer, and which is capable of a long useful life, having no stitched or otherwise relatively weak portions likely to be damaged in wear or laundering.

It is a further object of the present invention to provide a brassiere or bust cup having the advantageous characteristics mentioned in the preceding paragraphs, which is capable of being knit flat on a full fashion machine, but results in an element permanently formed in the desired cup shape, and which is well adapted to be manufactured inexpensively by reason of its substantially automatic production.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described, and of which the scope will be indicated by the appended claims.

In the drawings.

FIG. 1 is a plan view showing a knitted brassiere of the present invention; and

FIG. 2 is a transverse sectional view taken substantially along the line 2—2 of FIG. 1.

Referring now more particularly to the drawings, and specifically to FIG. 1 thereof, the device, there generally designated 10, is illustrated as having been directly removed from a full fashion hosiery machine and may be used in its entirety as a brassiere, say with the addition of straps, or used in part of foundation garments, bathing suits, etc.

In general, the device 10 is fashioned during the knitting to widen and narrow in a predetermined manner to produce the concave cups of the desired size and configuration. As is well known, widening and narrowing of knitted fabric on a full fashioned machine is obtained

by movement of the fashioning fingers, and may be accomplished while maintaining a perfect selvedge edge.

The device 10 may be considered as including a pair of substantially identical cups 11 arranged in end to end relation and connected together by a connecting portion or bridge 12. Extending from the outer sides or ends of the cups 11 are respective straps or strap attachment parts 13.

The device 10 is knit longitudinally or lengthwise so as to pass endwise from the knitting machine. For purposes of description we may consider knitting to start at the lower end 15. The surface lines on the device 10 of FIG. 1 may be considered as representative of the needle wales, which of course extend generally normal to the courses and the direction of maximum elasticity or resiliency. From the point 15 to the point A, the leftward wales 17 are produced by straight knitting, while the rightward side is fashioned by a series of widenings 16, preferably close to the selvedge. This is accomplished by moving the fashioning fingers outward one needle at a time. The leftward wales 17 and the rightward wales 18, introduced by the fashioning at 16, continue by straight knitting from point T to point B. At point A additional widening is commenced on the right side of the wales 18 very close to the selvedge to define a widened area 19, and starting from the point B additional widening is commenced on the leftward side of the wales 18, between the latter and the straight knit continuing wales 17. The widening area 19 continues to the point C, intersecting with and forming fashioning marks at the wales 18 on the righthand side thereof between the points A and C to define an area of increasing width extending in the direction away from the end point 15. Similarly, the widening of area 20 continues to the point D, intersecting with and forming fashioning marks at the wales 18 on the leftward side thereof between the points B and D to define an area of increasing width extending in the direction away from adjacent to the end point 15. The fabric areas 19 and 20 of increasing width result from widening operations with the fashioning fingers being moved outward one needle at a time. The fashioning fingers are then racked back and repositioned on the same needle wales for successive widening operations. By means of filler point, no objectionable widening holes result from the widening procedures.

The wales 18 are defined between the points A and C by a plurality of straight knit courses intersecting on their right side with the wales of area 19, and on their left side with the wales of area 20. From the point C to the point E is performed a single needle widening operation on the right side of the wales 18 to extend the courses thereof and define wales 18*a* in an area 26. This widening procedure is accomplished without repositioning of the fashioning fingers to provide quick widening action. Simultaneously, straight knitting of the area 19 continues in the area 21 from the point C to the point E. Thus, the widening operation forming the wales 18*a* produces an area 26 on one side of the wales 18 of increasing width in the direction away from the end point 15 and forming widening marks with the area 21.

Between the points D and G straight knitting continues to define an area 22 extending from the widened area 20. Also, straight knitting continues between the points E and F to define an area 23 extending from the area 21. Further, straight knitting of the wales 18 and 18*a* continues to define an area 24 between the areas 22 and 23. Thus, straight knitting, without any fashioning, takes place between the points D and G throughout the entire width of the garment. The size of the garment may be advantageously varied by selecting the desired number of courses in the areas 22, 23 and 24.

From the point F to the point H the area **28** defined by the wales **18***a* is narrowed quickly by a single needle narrowing operation with the fashioning fingers moving leftward and without repositioning of the fingers. Continued straight knitting of the area **23** proceeds from point F to point H, defining the area **29**. A series of narrowings are formed at the juncture of area **29** with the area **28** from the point F to the point H.

A narrowed area **30** extends from the area **22** between the point G and the point I, which is accomplished by repeated single needle narrowing with the fashioning fingers being repositioned on the same needle wales. Thus, the narrowed area **30** is located on the left side of the wales **18**, of decreasing width extending away from the point **15** between the points G and I, and forms fashioning marks at its juncture with the wales **18**.

On the other, right side of the wales **18**, between the points H and J, continuing from the area **29** is an area **31** of decreasing width in the direction away from the end point **15** and forming fashioning marks at its juncture with the wales **18**. The narrowing operation of area **31** may also be a single needle narrowing with the fashioning fingers being repositioned after each narrowing operation.

The wales **18** extend beyond the points I and J through the bridge or connecting region **12** and beyond the point A of the next successive cup element **11**. It will be observed that the leftmost or outer wales **17** extend entirely along the wales **18** to the point B, thence entirely along the left side of the areas **20, 22** and **30** to the point I, and thence again along the wales **18** through the bridge region **12**. Thus, the wales **17** from the point B to the point I may be considered as lateral extensions of the areas **20, 22** and **30**. It will also be noted that the laterally outer or rightmost wales of the areas **19, 21, 23, 29** and **31** extend from the point A, through and beyond the point J, and thence along the right side of the wales **18** throughout the bridge or connecting region **12**.

The above description is believed to comprehend both the structure and method of manufacture of the instant invention. As continuation beyond the upper point A in describing the structure and manufacture of the upper cup element **11** is identical to that described between the points A—A, further description is unnecessary.

It will now be appreciated that the instant invention provides an integrally knitted breast receiving element or connected series thereof, for use together or separately as a complete brassiere or as parts of various garments.

As the wales **18** extend throughout the region between points A and J, for purposes of terminology these wales may be considered as defining an elongate, relatively narrow, longitudinally extending strip. Also, the areas **26, 24** and **28** on one side of the strip defined by wales **18** may be considered as formed of a group of additional rows or courses, or extensions of the courses of the strip, combining to define a laterally outwardly convex composite area.

Further, it will be apparent that strip **18** has additional areas on each side thereof, the areas on one side comprising a first area in which the courses of the strip are progressively widened from adjacent one end of the strip to a first point C, a second area in which the courses of said strip are progressively narrowed from a second point H toward the other end of the strip, and a third area **21, 23, 29** between the first and second areas. The wales of the first area continue through the third area, where the innermost of said wales is spaced from the strip, to become the wales of the second area. It may further be considered that the courses of the third area, **21, 23, 29** progressively widen and then narrow between points C and H on the inside of the continuing wales so as to make up the cup areas **26, 24** and **28**. The areas on the other side of the strip may be considered to comprise the connected fourth and fifth areas **20** and **30** in which the courses of the strip are respectively progressively widened and then narrowed from adjacent said one end of the strip towards the other end thereof.

By reason of the above discussed areas of narrowing and widening, and their interrelationship with each other and with the longitudinal strip **18**, there is formed the concavo-convex cup **11**, which assumes the natural cross sectional formation illustrated in FIG. 2.

From the foregoing, it is seen that the present invention provides a breast receiving element of apparel and method of manufacturing the same which fully accomplish their intended objects and are well adapted to meet practical conditions of manufacture and use.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within the spirit of the invention and scope of the appended claims.

What is claimed is:

1. An integrally knit breast-receiving element of apparel comprising a longitudinally extending strip having continuous wales extending the full length thereof and areas on each side of said strip, the areas on one side comprising a first area in which the courses of said strip are progressively widened from adjacent one end of said strip toward a first point, a second area in which the courses of said strip are progressively narrowed from adjacent a second point toward the other end of said strip, and a third area between said first and second areas, the wales of said first area continuing through said third area, where the innermost of said wales from said first area is spaced from said strip, to become the wales of said second area, the courses of said third area progressively widening and then narrowing between said first and second points on the inside of said wales from said first area, the areas on the other side comprising connected fourth and fifth areas in which the courses of said strip are respectively progressively widened and then narrowed from adjacent said one end of said strip towards the other end thereof.

2. An element of apparel, according to claim 1, the courses of said third area only widening between said first point and a third point and narrowing between a fourth point and said second point, said third area being of uniform width between said third and fourth points.

3. An element of apparel according to claim 1, said element of apparel having an additional area connecting the fourth and fifth areas and of uniform width.

4. An element of apparel according to claim 3, the courses of said third area only widening between said first point and a third point and narrowing between a fourth point and said second point, said third area being of uniform width between said third and fourth points.

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