United States Patent

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[54] **BRASSIERE WITH ADJUSTABLE STRAPS AND CUP SUPPORT**
4 Claims, 9 Drawing Figs.

[52] **U.S. Cl.** **128/467,** 2/67, 128/480, 2/323, 128/510, 24/68
[51] **Int. Cl.** **A41c 3/10,** A41d 25/16
[50] **Field of Search** 128/477, 482, 483, 484, 485, 486, 487, 488, 480, 510–512, 479, 447, 425; 2/67, 323

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ABSTRACT: A garment construction employing features incorporated into various garments such as brassieres, swimsuits, dresses, nightgowns, athletic supports for men and the like with the features including a novel buckle structure, adjustable supporting straps, reinforcing cups and a rearrangement of detachable fasteners to facilitate use of the garment.

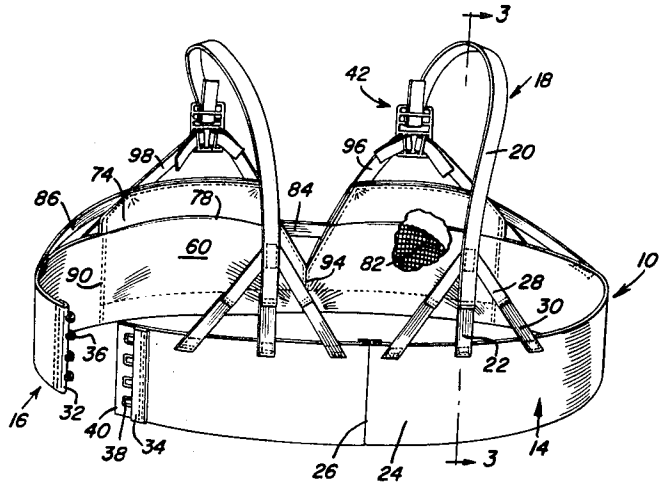


Fig. 1

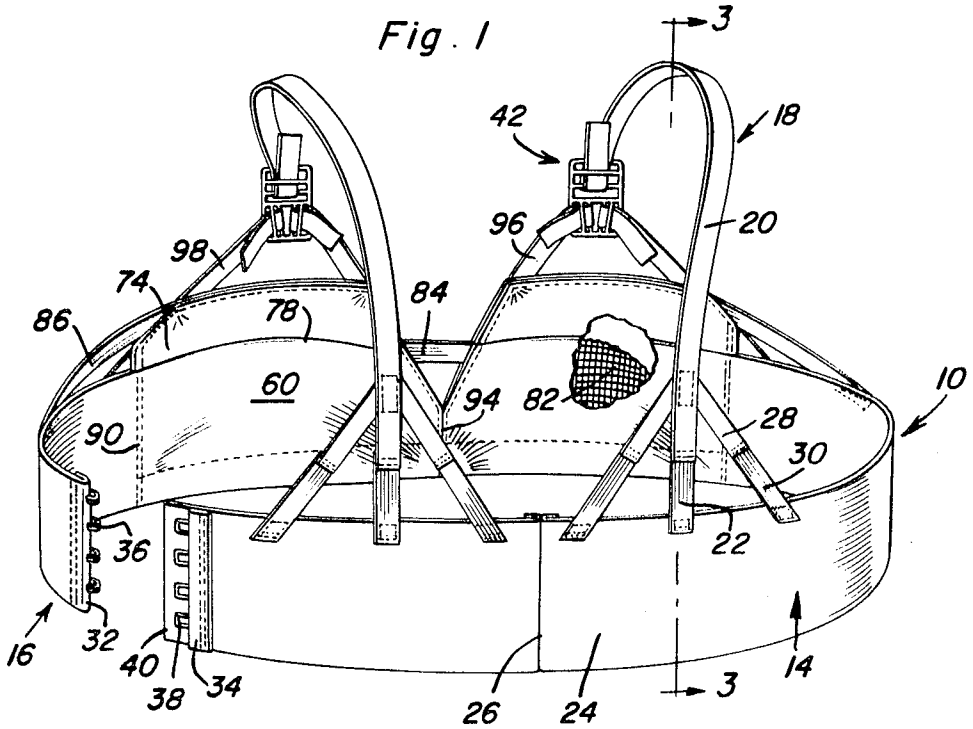


Fig. 2

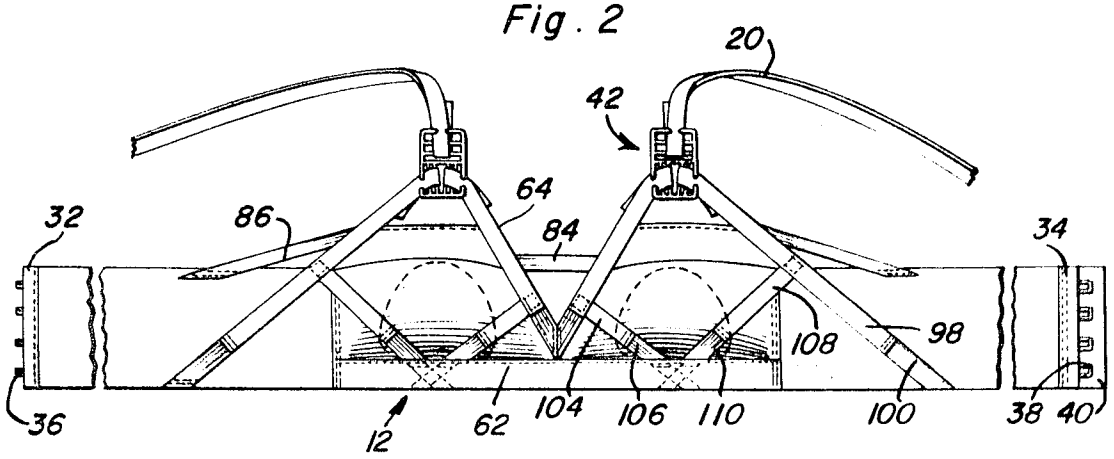


Fig. 8

Fig. 6

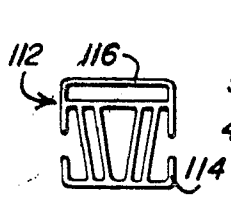
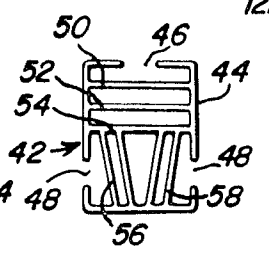
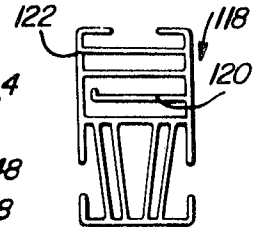


Fig. 7





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Fig. 3

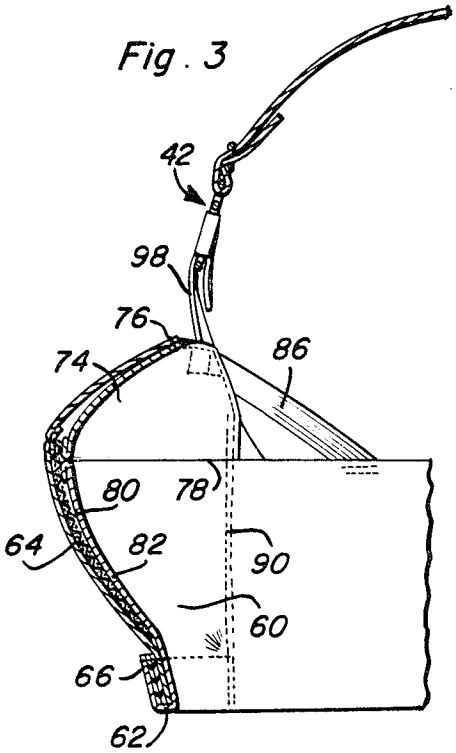


Fig. 9

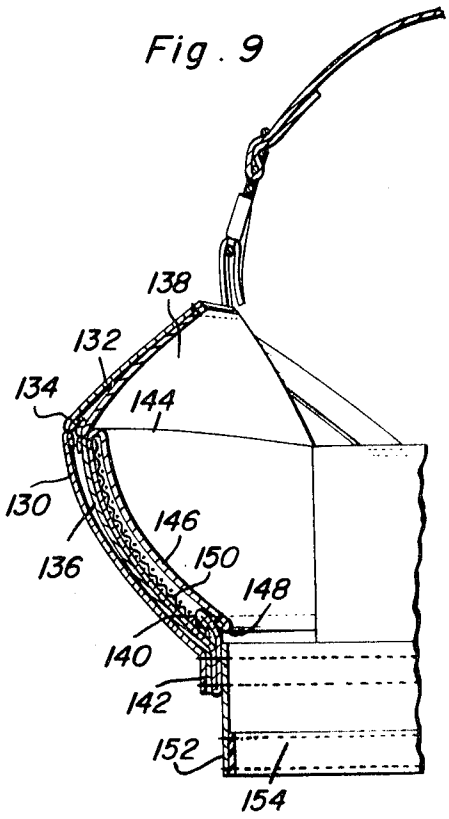


Fig. 4

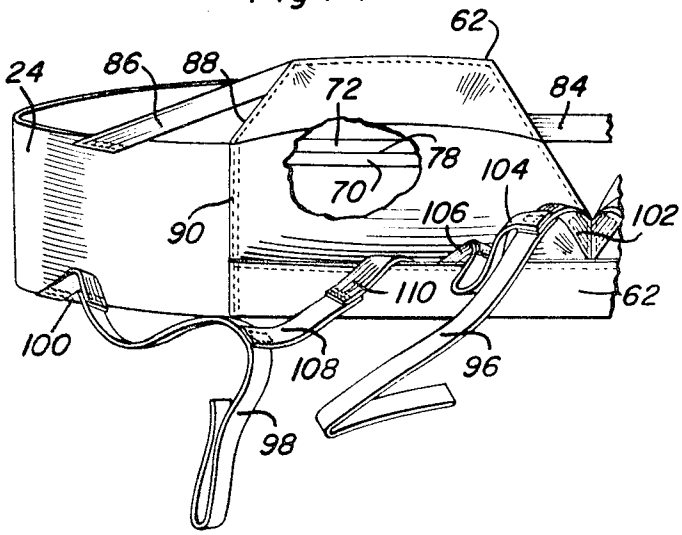
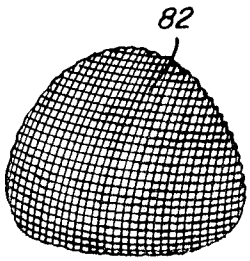


Fig. 5



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BRASSIERE WITH ADJUSTABLE STRAPS AND CUP SUPPORT

The present invention generally relates to garments which for the purpose of illustration is disclosed as a brassiere having a novel assembly of components which include features which enhance the supporting characteristics of the garment, enable adjustment thereof to fit various wearers and fastening arrangement enabling the garment to be easily donned or removed.

An object of the present invention is to provide a garment incorporating a pair of open topped cups receiving reinforcing cups for forming breast cups in a brassiere.

Another object of the present invention is to provide a garment in accordance with the preceding object together with a novel adjustable supporting strap arrangement including shoulder straps with breast cup supporting straps at the forward end thereof and diverging extension straps at the rear thereof to provide adequate adjustment for size and support in an optimum manner.

Yet another object of the present invention is to provide a garment construction in accordance with the preceding objects in which the chest encircling band is provided with detachable fasteners at the sides thereof to facilitate manipulation of the fasteners as compared with the location of the fasteners at the rear of the chest encircling band.

Still another important object of the present invention is to provide a buckle structure incorporated into a garment structure having facility for adjustably receiving several straps attached thereto with this buckle structure being incorporated into a brassiere for allowing adjustability of the cup size and for adjusting the supporting characteristics of the brassiere. This buckle is also provided with a utility hook incorporated therein which has specific use on swimming suits, dresses, and the like to support the garment in position in overlying relation to the breast cups of the brassiere.

Still another important feature of the present invention is to provide a garment construction which is relatively simple in construction, efficient for its particular purposes and relatively inexpensive to manufacture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to the like parts throughout, and in which:

FIG. 1 is a perspective view of the garment construction of the present invention with portions thereof broken away;

FIG. 2 is a front elevational view of the construction of FIG. 1 with portions thereof broken away for clarity;

FIG. 3 is a vertical sectional view taken substantially upon a plane passing along section line 3—3 of FIG. 1 illustrating further structural details of the breast cup and the reinforcing cups therein;

FIG. 4 is a fragmental perspective view illustrating further structural details of the breast cup and supporting strap assembly associated therewith;

FIG. 5 is a perspective view of one of the reinforcing cups inserted into the open top breast cup;

FIG. 6 is an elevational view of one type of buckle employed for connecting the shoulder straps and breast cup supporting strap;

FIG. 7 is an elevational view of another form of buckle;

FIG. 8 is an elevational view of another form of buckle employing a hook thereon for engagement with a dress, swimsuit or the like; and

FIG. 9 is a sectional view similar to FIG. 3 but illustrating a modified structure.

Referring now specifically to the drawings, the garment construction in the form of a brassiere is generally designated by numeral **10** and includes a pair of breast cup structures **12** at the forward end thereof, a chest encircling strap **14** extending therefrom and associated fastening means **16** thereon and shoulder strap assemblies **18** connected thereto for supporting the brassiere **10** in position on the wearer.

The shoulder strap **18** each include an elongated flexible and relatively narrow strap **20** constructed of any suitable material compatible with the garment in which the shoulder strap is incorporated. The rear terminal end of the shoulder strap **20** includes an elastic insert **22** which is attached to a chest encircling strap or band **24** which is relatively wide and also constructed of fabric material or the like with the chest encircling band **24** including a center rear seam **26**. Extending downwardly from the shoulder strap **20** in diverging relation is a pair of straps **28** attached to the strap **20** by stitching or the like and extending downwardly and outwardly therefrom in a diverging manner. The lower ends of the straps **28** each have an elastic insert **30** incorporated therein that is attached to the chest band **24** thus connecting the strap to the rear portion of the chest band **24** in a resilient manner and in a manner that will retain the shoulder straps **20** generally in perpendicular relation to the chest band **24**.

The chest band **24** includes separable ends **32** and **34** which has a plurality of hooks **36** and loops or eyes **38** mounted thereon for detachable interconnection. A flap **40** underlies the loops or eyes **38** to skin of the wearer from contact with the fastening means **16**. It is noted that the fastening assembly **16** is oriented to the side of the garment in an area generally along the side of the wearer so that access may be more easily had to the fastener assembly **16**.

The forward ends of the shoulder straps **20** are each connected to a buckle structure **42** which includes a generally rectangular wire rodlike frame **44** having an entrance opening **46** in the upper edge thereof and a pair of entrance openings **48** in the lower side portions thereof. Extending between the side portions of the frame **44** are three equally spaced transverse rods **50**, **52** and **54** through which the free end of the strap **20** is threaded in a manner to adjustably connect the strap **20** to the buckle **42**. Extending between the bottom of the frame **44** and the rod **54** is a pair of rods **56** and a pair of rods **58** which are spaced from each other with the pair of rods **56** disposed in angular relation to the pair of rods **58**. The upper ends of the pairs of rods **56** are spaced further away from the upper ends of the pair of rods **58** than the lower ends thereof so that the pair of rods **56** converge downwardly toward the pair of rods **58** in a manner for a purpose described hereinafter. The buckle structure **42** illustrated in FIGS. **1–3** of the drawings is also illustrated in more detail in FIG. **7** of the drawings with FIG. **3** illustrating the manner in which the strap **20** can enter the opening **46** and pass under the top member of the frame **44**, downwardly over the front of the rods **50** and **52** upwardly around the rod **54** and back over top rod **52** thus adjustably and frictionally connecting the strap **20** to the buckle **42** to enable the supporting characteristics of the garment to be carried by adjusting the connection of the strap **20** with the buckle **42**.

Forming a continuation of the chest band **24** is an inner fabric member **60** having a hem **62** along the bottom edge thereof to which is attached an outer fabric member **64** free of the fabric member **60** except by virtue of stitching **66** which secures the hem **62** on the inner fabric member to a hem **68** on the outer fabric member **64** with additional reinforcement in the hem if desired which provides engagement with the front surface of the chest of the wearer so that the combined fabric members **60** and **64** will form breast cups.

The upper edge of the inner fabric member **60** terminates coincident with the top edge of the chest band **24** in a reversely folded hem **70** which coacts with a reversely folded hem **72** on an upper fabric member **74**. The upper fabric member **74** has the top edge thereof terminating coincident with the top edge of the outer fabric member and secured thereto by rows of stitching **76**. Thus, the two reversely folded hems **70** and **72** define a slitlike opening **78** into the space or pocket **80** formed between the fabric members **60** and **64**. Thus, the space **80** becomes an open top pocket for receiving a generally conical shaped reinforcing insert **82** in the form of a nylon mesh or other similar and equivalent shape sustaining material which forms and shapes the garment to effectively support the breast of the wearer in a manner which has a useful appearance and

promotes air circulation due to the mesh characteristics thereof.

Extending between the breast cups at the upper edge thereof is an elastic band **84** which conforms the upper surface of each breast cup with the region of the chest of the wearer immediately above the breast. The outer edge of each breast cup has a downwardly extending elastic strap **86** attached thereto and to the chest band **24** as illustrated in FIG. **4**. The outer upper corner of each breast cup defined by the fabric members **64** and **74** is beveled or inclined as at **88** with the outer edge thereof being substantially vertical and the lower edge of the inclined portion **88** terminates at the upper edge of the band **24** so that vertical stitching **90** is employed to secure the outer fabric **64** to the chest band **24**. The inner edges of the fabric members **60**, **64** and **74** also are inclined downwardly and inwardly as at **92** to provide a V-shaped cutout which terminates above the hems **62** and **68** with the V-shaped cutout defining the two breast cups and a center front seam **94** secures the breast cups together to stabilize the position of the components thereof with the elastic strap **84** being continuous between the breast cups and the opposite end thereof is attached to the strap **24** at the outer edge of the opposite breast cup as illustrated in FIG. **1**.

A pair of breast supporting straps **96** and **98** have their upper ends attached to the buckle **42** by threaded through the rods **56** and **58** in the manner illustrated in FIGS. **1** and **2** with the strap **96** extending downwardly and inwardly and the straps **98** extending downwardly and outwardly as illustrated in the front view (FIG. **2**). The lower end of the outer strap **98** is provided with an elastic insert **100** that is attached to the lower edge of the chest band **24**. The lower edge of the strap **96** is attached to the outer surface of the breast cup as indicated at **102** and these straps where they connect generally to define the lower extremity of the V-shaped notch defined by the inclined edges **92** as illustrated in FIGS. **1** and **2**. Extending perpendicularly and downwardly from the strap **96** is a strap **104** having an elastic insert in the lower end thereof as at **106** which extends into the hems **62** and **63** and stitched thereto near the center bottom of the breast cup. The strap **98** is provided with a similar inwardly extending strap **108** having an elastic insert **110** therein which is attached to the breast cup in substantially the same center region as the elastic insert **106** on the strap **104** thus providing for elastic support of the breast cups. As illustrated in FIG. **4**, only the lower ends of the straps **96**, **98**, **104** and **108** are attached to the garment so that it is only necessary to release the straps **96** and **98** from the buckle **42** in order to disconnect the straps **98** and **96** from the shoulder strap **20**. By adjusting the straps **96** and **98**, the cup size may be adjusted as may the supporting characteristics of the brassiere and the shoulder straps also enable such adjustment to be accomplished. The entire structure other than the buckles and fasteners is constructed of washable material with standard techniques being employed in constructing the garment of well-known fabric materials, The buckle structure may be metal, plastic or any other suitable material and the buckle may take other forms including the embodiment illustrated in FIG. **6** and generally designated by numeral **112** and which includes a generally rectangular frame **114** having the lower half thereof being identical to the structural illustrated in FIG. **7** for attaching the straps **96** and **98** thereto. However, in this construction, only a single top bar **116** is provided which, in effect, corresponds with the bar **52** in FIG. **7** with the shoulder strap being attached thereto by looping the shoulder strap under the bar **116** and then adjustably anchoring it to itself by using a conventional adjustable buckle or other fastening means.

FIG. **8** illustrated another embodiment of the buckle generally designated by the numeral **118** which has the same construction as in FIG. **7** except that an additional free hook **120** is provided on one side of the rectangular frame **122** for engagement with a swimsuit, dress, nightgown or the like to support the garment in proper orientation in overlying relation to the brassiere cups. In effect, the structure of FIG. **7** has been elongated between the rod **52** and **54** by elongating the frame **122** and the free hook **120** has been disposed between the bars **52** and **54** with the shoulder straps being attached to the buckle **118** in the same manner as in FIG. **7** and the straps **96** and **98** being attached to the lower portion of the buckle **118** in the same manner as in FIGS. **6** and **7**.

The orientation of the straps may vary depending upon the size requirements of the garment and the straps **104** and **108** may actually cross at a point slightly above the lower edge of the breast cup to facilitate elastic support of the breast to provide additional and more comfortable support and to provide the desired shape characteristics thereto.

Thus, with this construction, the adjustable supporting straps provide additional lift especially to areas under the arm and chest thus promoting a fuller appearance to the bust which is quite comfortable in that intermediate sizes can be obtained by adjusting the strap. Also, the elastic inserts distribute strain over a large area rendering the device more adjustable. The use of a selected buckle construction enables effective adjustment of the straps and also enables adequate support for an overlying outer garment or the like.

A modified embodiment of the invention is illustrated in FIG. **9** in which the breast cups are provided with the opening adjacent the bottom edge thereof rather than adjacent the top edge thereof for receiving the reinforcing insert **82** which may be either cup-shaped as illustrated or of flat flexible material. In FIG. **9**, the construction of the garment is illustrated in which the breast cup is formed by an outer fabric including a lower portion **130** and a top member **132** having arcuately curved edges joined by a seam **134** to define a conical shaped cup in the same manner as the construction of FIGS. **1–5**. Also, a liner including a lower member **136** and an upper member **138** is provided for the cup and an inner member **140** of fabric material is attached to the outer member by stitching **142** and is reversely folded at its upper edge **144** and extends downwardly as an inner panel **146** terminating in an entrance slit **148** by which the insert **150** may be inserted into the cup. Thus, the insert may be inserted either from the top or the bottom and additional padding may also be inserted if desired. Also, in this construction, a band of elastic cloth **152** and an elastic strap **154** provided thereon is attached to the lower edge of the cup to define a portion of the chest band.

The placement of the point of the V between the breast cups may be varied as to is elevational position to provide the desired design.

If desired, two or more rows of eyes for receiving the fastener hooks may be provided with the rows spaced apart to enable adjustment of the size of the garment. Also, all or any part of the features of the invention may be used in various types of garments. Also, where elastic members are attached to the interior surfaces of bands such as the band **24** or the band **142**, there may be provided a cover material or lining to prevent abrasion of the skin.

The supporting strap may be adjusted so that the buckle is shifted sideways with the shoulder straps following thus allowing certain types of garments to be worn by keeping the supporting straps out of sight. In effect, raising the buckle would enlarge the breast cups due to the manner in which the supporting straps follow the buckle, while lowering the buckle would similarly reduce the size of the breast cups.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be restored to, falling within the scope of the invention.

What is claimed as new is as follows:

1. In a garment construction, a chest encircling band, shoulder straps connected with the band and adapted to extend over the shoulder of a wearer for supporting the band vertically in chest encircling position, said chest encircling band including a pair of breast supporting cups at the forward

portion thereof with each cup including a pair of upwardly converging supporting straps, and buckle means adjustably connecting the forward ends of the shoulder straps and the upper ends of the converging straps connected with the breast cups, each of said breast supporting cups including an inner fabric member and an outer fabric member having an entrance slit adjacent the upper end thereof in the inner fabric member with the major portion of the inner and outer fabric members being free of each other thus forming pockets therebetween, and reinforcing cup-shaped inserts in said pockets for effectively supporting and shaping the breasts of the wearer.

2. The structure as defined in claim 1 wherein said buckle means includes an open rectangular frame having a plurality of downwardly converging pairs of spaced rods incorporated therein for adjustably receiving the upper ends of the upwardly converging breast cup supporting straps, and at least one horizontal bar disposed at the upper end thereof for receiving the forward end of a shoulder strap, wherein all of the straps can be individually adjusted and locked into position.

3. The structure as defined in claim 1 wherein said breast cups have a V-shaped recess defining their inner edges, a resilient strap extending across the recess, the outer edge of each cup extending above the upper edge of the band, and a resilient strap connecting the upper edge of the band with the upper outer side edge of the cup.

4. The structure as defined in claim 1 wherein said chest encircling band includes detachable fastener assemblies located adjacent one of the breast supporting cups, each shoulder strap and each breast cup supporting strap including an elastic insert for enabling elastic elongation of the strap and resilient support of the breast cup, a pair of downwardly and inwardly extending straps attached to the breast cup supporting straps intermediate the ends thereof with the lower ends of the downwardly extending straps being attached to the chest encircling band for additional support thereof and distribution of supporting stresses over a larger area, each of said downwardly extending straps including an elastic insert.

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