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BRASSIERE

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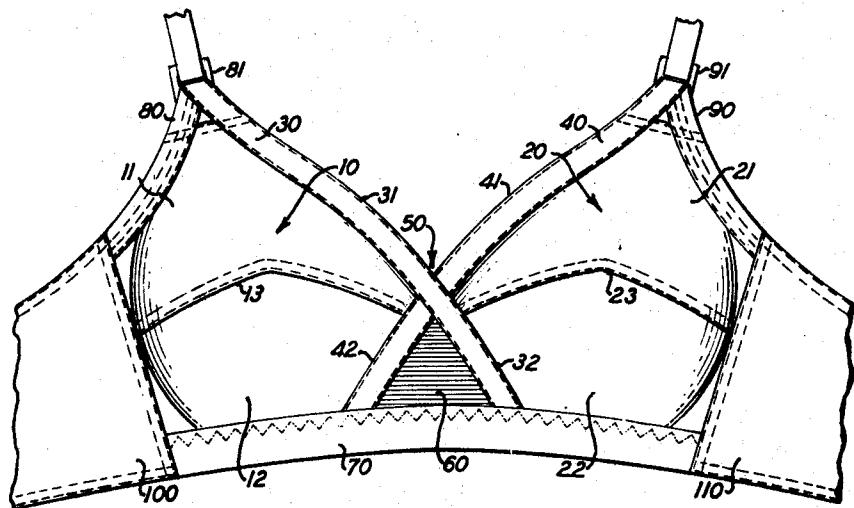


FIG. 1

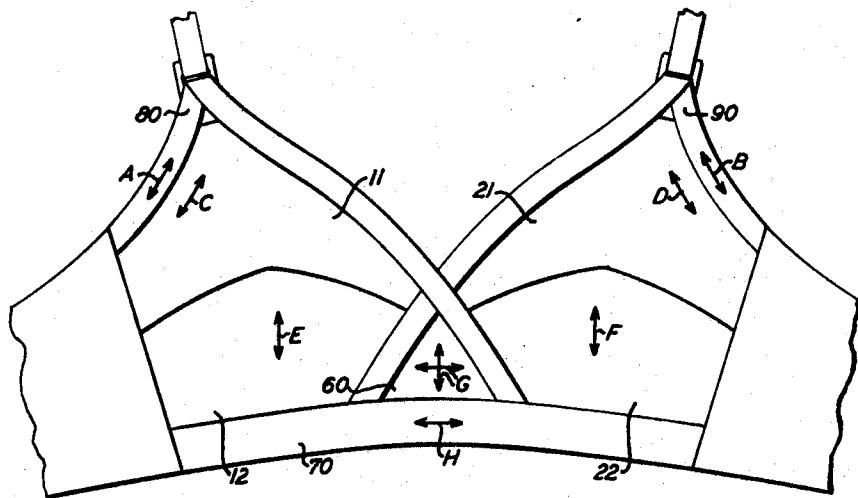


FIG. 2

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BRASSIERE

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ABSTRACT OF THE DISCLOSURE

A brassiere construction that has a pair of stretchable cups and a pair of stretchable tapes secured to the outer edges of the top portions of the cups, with one tape extending downwardly and outwardly, one from the apex of one cup and the other tape extending downwardly and outwardly from the apex of the other cup and with the top portions of each cup stretchable substantially in the same direction as the stretch in the tape attached to the outer edge of the cup.

This invention is a brassiere designed and constructed to expand with the chest when the wearer breathes and moves about and yet prevent excessive pressures against the body.

Basically, a brassiere must adequately support and shape the breasts and yet be comfortable. It is the comfort feature that is most difficult to achieve in designing and constructing a brassiere.

It is most difficult to achieve comfort by virtue of the common fact that a woman's chest is constantly expanding and contracting as she breathes, moves her arms and indulges in other body motions. Each change in chest size and shape requires an accommodating change in brassiere size and shape particularly with respect to the size and shape of the breast cups. The more nearly perfect the brassiere accommodates to changes in size and shape of the chest, the more comfortable the brassiere.

Standardization of cup sizes also presents difficulty to the brassiere designer in that the brassiere must properly support and shape breast sizes that are between standard cup sizes. Although half-size cups would resolve this problem in the most part, it is not a practical solution. The optimum of brassiere design is achieved when the brassiere is capable of properly supporting and shaping breast sizes that are less than or more than standard cup sizes, yet provide the required comfort characteristics.

The prior art has solved in most respects some of the more common brassiere disadvantages, such as upward creeping of the brassiere, roll-over of the underbust bands, shoulder strap adjustability, girthwise adjustability, underbust distribution of pressures and independent support of each breast. One undesirable aspect that has yet to be resolved is first the discomfort due to excessive pressures against the pectoral muscles of the wearer that is caused by the underarm portion of the brassiere, and second the discomfort caused by improper fitting of the breast cups.

A brassiere constructed in accordance with my invention surprisingly accommodates to each change in chest size and shape as the wearer breathes and moves about, thus uniquely alleviating excessive pressures against the pectoral muscles and breasts of the wearer, yet adequately supports and shapes the breasts and properly fits the wearer.

According to my invention, a brassiere is provided with a pair of stretchable cups and a pair of stretchable tapes respectively secured to the outer edges of the cups. Preferably, the upper half of each cup is stretchable in a direction substantially parallel to the direction of stretch of the corresponding stretchable tape, while the lower

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half of each cup is stretchable in a direction substantially vertical with respect to the brassiere when on the wearer.

It is an object of this invention to design a brassiere which eliminates excessive pressures against the pectoral muscles of the wearer yet advantageously provides proper support and necessary comfort.

It is another object of this invention to design a brassiere capable of properly supporting and shaping breast sizes that are between standard cup sizes, yet provide the required comfort.

Proceeding now to a more detailed description of the invention, reference will be had to the accompanying drawings which are to be understood as being illustrative and not limitative of the invention.

FIGURE 1 is a front elevation of my brassiere as seen on the wearer, and

FIGURE 2 is a diagrammatic front elevation of the brassiere of FIGURE 1 with a series of arrows to illustrate the direction of stretch of portions of the brassiere.

It is to be understood that my brassiere may have any known suitable dorsal band arrangement and shoulder strap construction; these are not the subject of my invention, and as they are conventional they are merely indicated here.

Referring to the drawings, my brassiere has cups 10 and 20 of a conical to hemispherical shape, each cup having an upper half 11 and 21, a lower half 12 and 22, and a generally horizontal mid-seam 13 and 23. The members making up the cups are, as is usual, cut with convex edges that are pulled to each other, overlapped, and sewn together to form the mid-seam, thus providing outwardly peaked cups.

Extending from the top of the cups 10 and 20 and along the upper-inner edges thereof are narrow tapes 30 and 40. These tapes cross each other at midpoint 50 and extend along the lower-inner edges of the cups.

Tape 30 comprises an upper branch 31, which is secured to the upper-inner edge of upper cup portion 11, and a lower branch 32, which is secured to the lower-inner edge of lower portion 22. Tape 40 comprises an upper branch 41, which is secured to the upper-inner edge of upper cup portion 21, and a lower branch 42, which is secured to the lower-inner edge of lower cup portion 12. These tapes are preferably secured to each other at the crossing or midpoint 50.

Tapes 30 and 40 are preferably secured to the upper-inner edges of the cups by a double line, continuous run of stitching, and in the exemplary embodiment shown are non-stretchable or inelastic. It is contemplated however that tapes 30 and 40 may be stretchable or elastic and constructed as described in co-pending application, S.N. 434,292, filed Feb. 23, 1965, now Patent 3,222,127 in the name of Charles M. Sachs, which application is assigned to the assignee of this invention.

Although tapes 30 and 40 are inherently straight, the lower branches 32 and 42 are slightly bent inwardly when sewn to the shaped cups, thus resulting in the lower branches 32 and 42 being less divergent than the upper branches 31 and 41. This relationship tends to be confirmed and enhanced when the brassiere is on the body.

At the lower-center area of the brassiere is a triangular piece of two-way stretch elastic fabric 60, which is also sewn to the lower branches 32 and 42 of tapes 30 and 40 and to the lower-inner edges of the cups 10 and 20.

Across the front of the brassiere and under the cups 10 and 20 extends an underbust band 70, which is preferably stretchable in the girthwise direction. This band may be made of elastic material.

In the central region of the underbust band 70, girthwise stretchability is preserved by virtue of the fact that it is sewn to the lower edge of the triangular fabric 60, which

is stretchable, and by utilizing zig-zag stitching, Girthwise stretchability at the outer regions of the underbust band 70 is restrained since it is sewn to the lower edges of the cups which are virtually non-stretchable in the girthwise direction. It is preferable however to preserve a slight amount of girthwise stretchability at the outer regions of the underbust band. This may be achieved by slightly extending the band as it is sewn—with zig-zag stitching—to the cups, thus resulting in a finished product which is slightly gathered along the sewn edge. The underbust band is thus capable of a small degree of girthwise stretch.

Underbust band 70 is preferably two or three times more resistive to stretch than a like width of the two-way stretch fabric 60. The top edge of the underbust band 70 overlaps—and is sewn to—the lower edges of cups 10 and 20, the lower ends of tapes 30 and 40, and the lower edge of triangular piece 60.

Extending from the top of cups 10 and 20 and along the upper-outer edges thereof are narrow stretchable tapes 80 and 90. These tapes are preferably secured to the upper inner edges of cups 10 and 20 by a double line, continuous run of stitching and in the exemplary embodiment are elastic. It is contemplated that tapes 80 and 90 may also be constructed as described in the above mentioned co-pending application.

Crossed tapes 30 and 40 have their upper ends secured to corresponding upper ends of the stretchable tapes 80 and 90 so as to form upper loops which respectively extend through the lower loop of the conventional shoulder strap buckles 81 and 91. It is to be understood however that other well known constructions may be utilized to connect the upper ends of the tapes 30, 40 and 80, 90 to conventional shoulder straps or shoulder strap buckles.

In the embodiment shown, the underbust band 70 is coterminous with the outer edges of cups 10 and 20 and stretchable tapes 80 and 90, and all are secured to the dorsal band members 100 and 110 of any desired nature. When the underbust band is assembled into the composite front panel, it is curved in a downwardly concave arc. Desirably, the lower edges of the dorsal bands 100 and 110—when the brassiere is laid out flat—continue this same downwardly concave arc so that the dorsal bands will substantially lie straight across the wearers' back when the brassier is on the body.

The directions of stretch of certain elements of my brassiere are illustrated in FIGURE 2 by corresponding arrows. Stretch arrows A and B illustrate the stretch direction of the stretchable tapes 80 and 90, which stretch directions are substantially parallel to the stretch arrows C and D, the direction of stretch of upper cup portions 11 and 21. This construction of stretchability uniquely permits the outer-upper portion of the brassier to stretch or expand as well as permitting the entire upper halves of the cups to stretch or expand. Although maximum stretch is provided in the direction as illustrated by the stretch arrows A, B and C, D, lesser amounts of stretch are provided at angles up to 90 degrees displaced therefrom, whereupon the amount of stretch is minimum. Stretch arrows E and F illustrate the maximum direction of stretch of the lower cup portions 12 and 22, to wit, in the vertical direction.

The stretch characteristics of cups 10 and 20 and tapes 80 and 90 advantageously permit the brassiere to expand upwardly and outwardly which most nearly accommodates to and follows the natural expansion of the chest and pectoral muscles when the wearer breathes and moves about. This feature adequately relieves the plaguing problem of excessive pressures against the wearers' breast and pectoral muscles.

Stretch arrows G and H respectively illustrate the maximum stretch directions of the triangular fabric 60 and the underbust band 70. Two-way stretchability of the triangular fabric 60 further assists the brassiere in accommodating and following the natural expansion and contraction of the wearers' chest, particularly with re-

spect to body movements on one side and not the other that commonly occur when the wearer reaches out or up with one arm and not the other. Of course, the combined action of the two-way stretchable triangular fabric 60 and the underbust band 70 greatly reduce "creeping-up" of the brassiere as disclosed in the above mentioned co-pending application.

Underbust band 70 also allows the brassiere to accommodate and follow girthwise movements of the wearers' chest in the area below the breasts.

Since the cups, stretchable tapes, triangular fabric and underbust band accommodate to and follow the natural expansion of the chest, yet simply abut the body, excessive pressures against the breasts and pectoral muscles of the wearer are virtually eliminated, thus providing a highly satisfactory combination of breast support and comfort.

While I have illustrated the presently preferred embodiment of my invention, it will be understood that its teachings, in whole or in part, can be incorporated in many variations.

What is claimed is:

1. A brassiere comprising a pair of stretchable cups, and a pair of stretchable tapes respectively secured to the outer edges of the top portion of said cups that extends downwardly and outwardly from the apex of each cup, each of said cups having a stretchable upper portion in which the direction of stretch is substantially parallel to the direction of stretch of its respective stretchable tape, and a stretchable lower portion in which the direction of stretch is substantially vertical.

2. A brassiere according to claim 1 and further including an underbust band secured to the lower edges of said cups.

3. A brassiere according to claim 2 in which said underbust band has relatively restrained stretch in the regions which are secured to said cups and relatively free stretch in the remaining regions.

4. A brassiere according to claim 1 and further including a pair of crossed tapes respectively secured to the inner edges of said cups, said crossed tapes having one end secured to said underbust band and the other end secured to its respective stretchable tape.

5. A brassiere according to claim 4 in which said crossed tapes are secured to each other at their crossing point.

6. A brassiere according to claim 4 in which said crossed tapes are angled at their crossing point so as to diverge less therebelow than thereabove.

7. A brassiere according to claim 4 in which said crossed tapes are non-stretchable.

8. A brassiere according to claim 4 in which said stretchable tapes, stretchable cups and underbust band are elastic.

9. A brassiere according to claim 4 and further including a triangular piece of stretchable fabric secured to corresponding inner edges of the lower branches of said crossed tapes and to the upper edge of said underbust band.

10. A brassiere according to claim 9 in which said triangular fabric has both vertical and horizontal stretch.

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