Aug. 2, 1966 I. M. BERNFELD 3,263,685

LIGHTWEIGHT BRASSIERE CONSTRUCTION

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Fig. 1

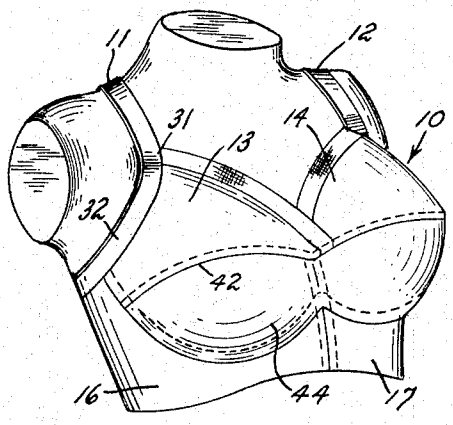


Fig. 2

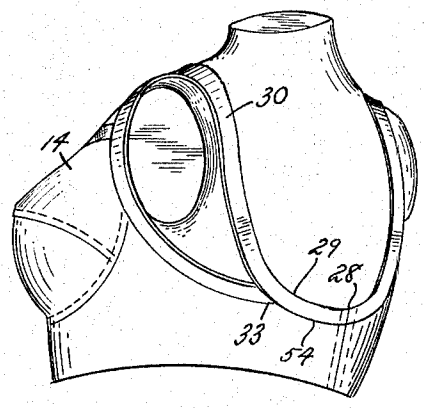


Fig. 3

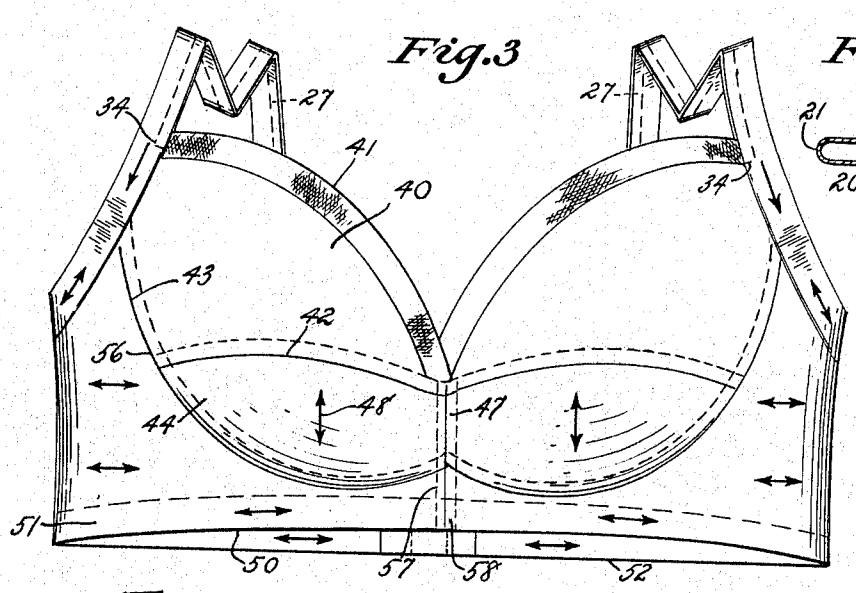


Fig. 5

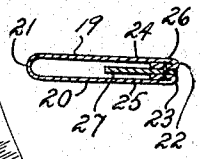
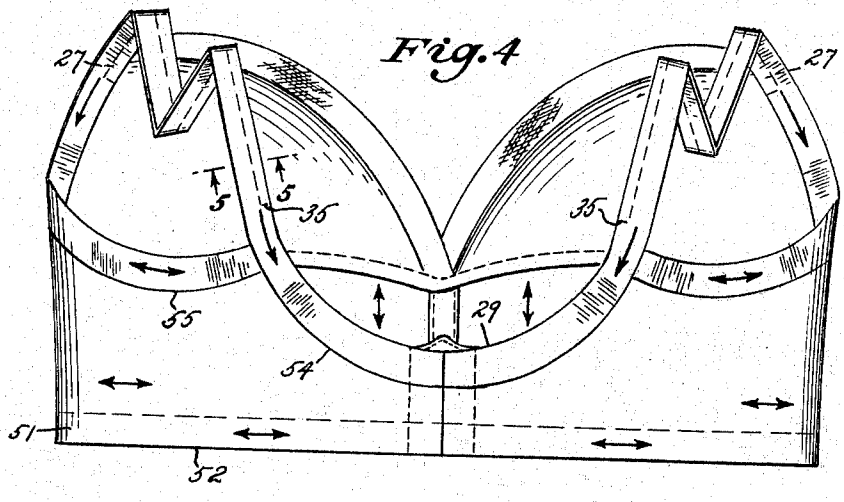


Fig. 4



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Fig.6

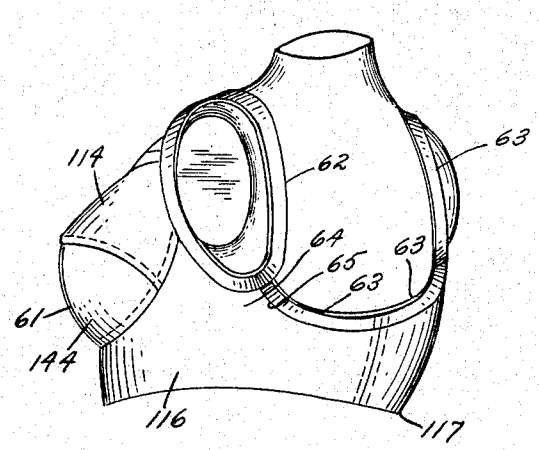
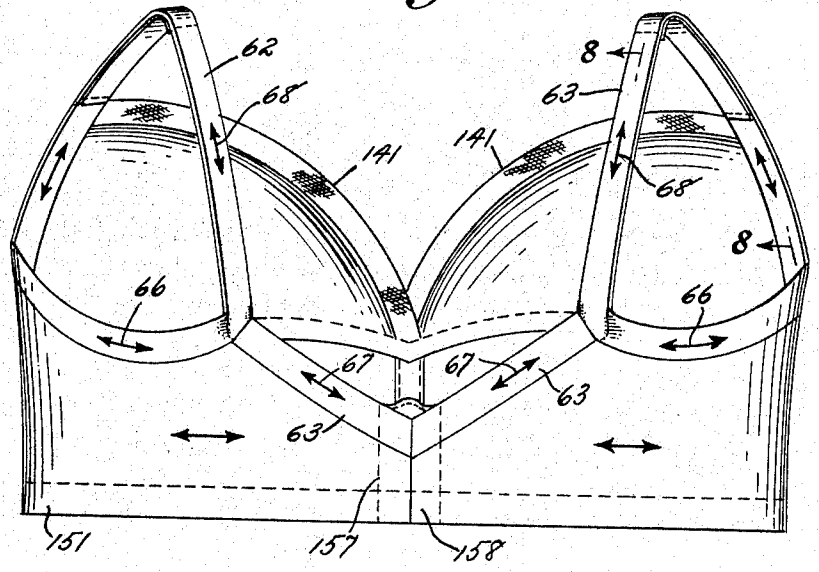


Fig.7



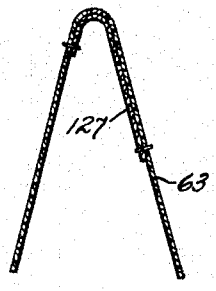


Fig.8

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3,263,685

LIGHTWEIGHT BRASSIERE CONSTRUCTION

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2 Claims. (Cl. 128—489)

This invention relates generally to the field of women's brassieres, and more particularly to an improved lightweight construction suitable for use during hot weather, or in conjunction with sport clothing. Devices of the instant type are generally known in the art, and the invention lies in specific constructional details permitting increased comfort, control and launderability.

It is among the principal objects of the present invention to provide a relatively lightweight brassiere construction possessed of very substantial strength and durability, while incorporating no boning or stiffening elements to achieve firm control.

Another object of the invention lies in the provision of an improved lightwight brassiere construction incorporating resilient shoulder strap elements, the degree of resiliency being precontrolled with reference to bust cup size.

Yet another object of the invention lies in the provision of an improved brassiere construction in which the cost of fabrication may be of a reasonably low order, with consequent wide sale, distribution and use.

Still another object of the invention lies in the provision of an improved brassiere construction in which the upper strap forms a loop passing under the arm, wherein the weight of the bust is supported principally by the shoulders, rather than by the conventional band which passes beneath the arms of the wearer.

A further object of the invention lies in the provision of an improved lightweight brassiere construction which will accommodate the increase in body measurement encountered during normal movement of the arms, expanding and contracting as required without permitting gaping.

A feature of the invention lies in the fact that a major part of the brassiere may be formed from porous nylon material permitted adequate ventilation and perspiration absorption.

Another feature of the invention lies in the provision of bust cup elements in which the lower portions thereof are resiliently expandable in a vertical direction only, thereby providing a means for conforming to individual bust shapes within a given bust cup size.

These objects and features, as well as other incidental ends and advantages, will more fully appear in the progress of the following disclosure, and be pointed out in the appended claims.

In the drawings, to which reference will be made in the specification, similar reference characters have been employed to designated corresponding parts throughout the several views.

FIGURE 1 is a front perspective view of an embodiment of the invention.

FIGURE 2 is a rear perspective view of the embodiment.

FIGURE 3 is a front elevational view thereof.

FIGURE 4 is a rear elevational view thereof.

FIGURE 5 is an enlarged transverse selectional view as seen from the plane 5—5 in FIGURE 3.

FIGURE 6 is a rear perspective view of a second embodiment of the invention.

FIGURE 7 is a rear elevational view of the second embodiment.

FIGURE 8 is a fragmentary sectional view as seen from the plane 8—8 in FIGURE 7.

In accordance with the first embodiment of the invention, the device, generally indicated by reference character **10** comprises broadly: first and second shoulder strap elements **11** and **12**, respectively; first and second burst cup elements **13** and **14**, respectively; and first and second main body elements **16** and **17**, respectively.

The first and second shoulder strap elements **11** and **12** are similar, and each being formed of elasticized textile material. In keeping with the requirement of low weight, I have found nylon to be suitable, which in elasticized form offers a high modulus of elasticity per unit area in relatively thin gauges. As best seen in FIGURE 5, the elements **11** and **12** are folded from planar material to form first and second plies **19** and **20**, interconnected along one longitudinal edge thereof by a fold line **21**, and along an opposite edge to form a pair of fold lines **22** and **23**. The free edges **24** and **25** are disposed inwardly of the plies **19** and **20** by stitch means **26** in well known manner. Also interconnected by the stitch means **26** is a planar non-elastic element **27** extending through a part of the length thereof.

Referring to FIGURES 1 and 2 in the drawing, the strap elements **11** and **12** extend from a center point **28** at the rear of the garment, over a curved rear portion **29**, and a shoulder engaging portion **30** to a point of interconnection **31**, the strap elements continue through a lower looped portion **32**, to a point of interconnection upon itself at **33**. The non-elastic element **27**, however, commences at the front at point **34**, just above the point of interconnection with a bust cup and extends rearwardly to a point **35**, the exact distance between the points **34** and **35** determining the degree of resiliency remaining in the front portion of a shoulder strap element. With relatively small bust forms, the inelastic element **27** may be relatively short, to provide a minimum of vertical lift, whereas in the case of larger or more pendulous busts, substantially the entire length of the shoulder engaging portion **30** may be reinforced against expansion to provide proper support. A cutting effect on the shoulders of the wearer is prevented by the fact that the non-elastic element **27** is completely enclosed within the first and second piles **19** and **20** which being of greater width provide a cushioning effect.

The bust cup elements **13** and **14** are preferably of deeply clefted configuration, to facilitate the wearing of the garment with low cut summer clothing, each including an upper member **40** bounded by an upper curved edge **41**, a lower transverse edge **42**, and a curved outer edge **43**. Interconnected at the transverse edge **42** is a lower member **44** bounded by a continuation of the outer edge **43** at **45** to the point **46**, where it interconnects with a vertical inelastic member **47**. The lower member **44** is formed from material which is relatively inelastic in a horizontal direction, but which is capable of considerable resilient expansion in a vertical direction, as indicated by the arrows **48** in FIGURE 3.

The main body elements **16** and **17** are formed from similar material, and preferably used in two ply thickness. As best seen in FIGURES 3 and 4, each is bounded by a lower edge **50** to which a facing **51** is sewn, a rear vertical edge **52** including complimentary interconnecting means (not shown) well known in the art, an upper rear edge **54**, an upper side edge **55** and an upper front edge **56**. The front vertical edge **57** is formed by a continuation **58** of the vertical inelastic member **47**. The main body elements are expandable only in a horizontal direction, as indicated by the arrows **59** in FIGURES 3 and 4, thereby permitting adjustment of the device with the breathing of the wearer, and in no way effecting the configuration of the bust cup elements during such expansion and contraction.

From a consideration of FIGURES 3 and 4, it will be

apparent that by limiting the degree of resilient elongation of the shoulder strap elements in the front and shoulder portions, and by confining possible expansion in the bust cup elements to that in a vertical direction in the lower parts thereof, a very considerable degree of control is obtained using a lightweight well ventilated material. Complete flexibility is possible without loss of tension at all necesary location.

Turning now to the second embodiment of the invention, as illustrated in FIGURES 6, 7 and 8, parts corresponding to those of the first embodiment have been designated by similar reference characters with the additional prefix "1."

In the second embodiment, the strap construction of the first embodiment is modified to permit greater expansion of the elements **116** and **117**, and lower members **144** are made of flexible non-resilient material. This will require the formation of the lower member **144** in two pieces interconnected by a vertical seam **61** (see FIGURE 5).

The circular strap elements **62** are employed in conjunction with shortened rear straps **63** interconnected at the outer ends thereof at substantially a right angle with respect to a tangent at the point of interconnection. This construction permits additional areas **64** in the first and second main body elements **116** and **117** at the lines of interconnection **65**.

The advantages of this construction will be appreciated from a consideration of FIGURE 7, wherein a line of force vector **66** instead of directly transmitting to a parallel line of force vector **67**, as would be the case in the first embodiment partially resolves into the second vector **67**, and partially into a third vector **68** which is in fact a portion of the shoulder strap. Thus, substantially less tension exists in the vector **67** than in the first embodiment, permitting greater expansion as required with normal body movement, and allowing the shoulders to a proportionately greater degree than in the first embodiment.

By attaching the shoulder strap onto the arm, as opposed to only being attached at the top of the bust cup, as in a conventional bra, substantially all of the problem of under-arm gaping is removed, as is the problem of tension over the shoulders caused by the weight of the bust being "hung" at one point. This construction retains the incorporated non-elasticity in the forward portion of the shoulder strap, as in the first embodiment, and expansion is permitted around the remaining part of the entire periphery of the elements **62**.

The advantage of the construction as employed in the second embodiment will be appreciated when it is realized that the area of the body at the underarm undergoes more variance in measurement, through activity, than any other area in the upper portion of the torso. To reach forward to pick up an object, the underarm area will in some cases increase as much as four inches from a point at the underarm on a line with the bust to the tip of the shoulder. In a conventional brassiere construction, this increase in body measurement is not

matched by the brassiere, as this area is normally rigid. In the second embodiment, the stretch area of the underarm portion matches the variance of the body measurement, and because of this, the garment stays in place on the body, expanding and contracting by stretching and returning in accordance with the change in body dimensions. At the same time, the rigid area of the strap at the front portion thereof acts as an anchor point from which the stretch areas operate and to which they return. Because of these "anchor points," control and uplift of the bust is never lost.

I wish it to be understood that I do not consider the invention limited to the precise details of structure shown and set forth in this specification, for obvious modifications will occur to those skilled in the art to which the invention pertains.

I claim:

1. A lightweight brassiere comprising a pair of main body elements, said elements interconnected to form a body encircling band having a front and rear portion, said front and rear portions including upper and lower edges, the upper edge of the said rear portion forming a concave upwardly curved contour, a pair of bust cup elements interconnected to the upper edges of the said front portion of the body encircling band, said bust cup elements having an upper member and a lower member interconnected along a substantially horizontal line, said upper member being of inelastic material, said lower member being formed of material which is inelastic in a horizontal direction and of limited elasticity in a vertical direction, a pair of shoulder strap elements of elastic material folded longitudinally to form a two ply thickness, said two ply thickness being interconnected along a single longitudinal edge, said shoulder strap elements interconnected along the concave contour of the upper edges of the rear portion of the body encircling band and forming a continuous looped configuration having a rear concave curved portion, a shoulder engaging portion and a front looped portion, said front looped portion interconnected to the upper member of the said bust cup elements and continuing through a lower looped portion to a point of interconnection with the rear curved portion, and an elongated non-elastic member interconnected within the said plies of elastic material along the said shoulder engaging portion so as to limit the resilient elongation thereof.

2. A lightweight brassiere construction as defined in claim **1** wherein the said shoulder strap elements are of a continuous circular looped configuration.

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