Nov. 5, 1968 A. P. RAMSELL 3,409,017

BRASSIERE

Filed May 9, 1966 2 Sheets-Sheet 1

FIG. 1.

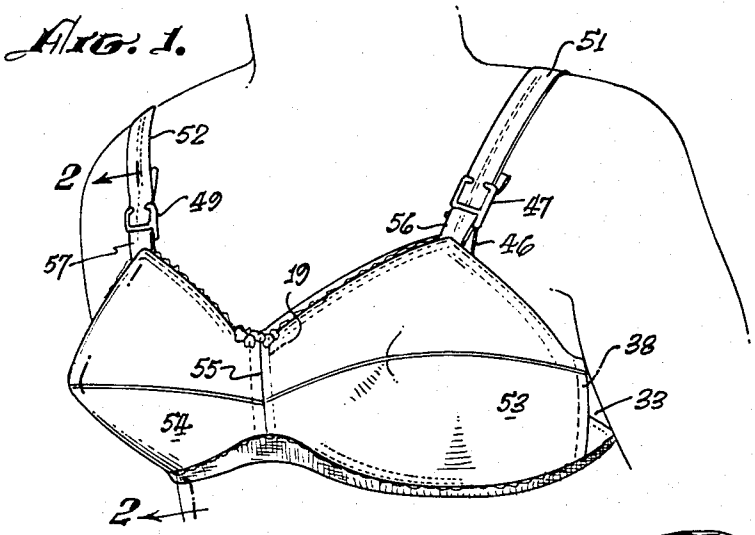
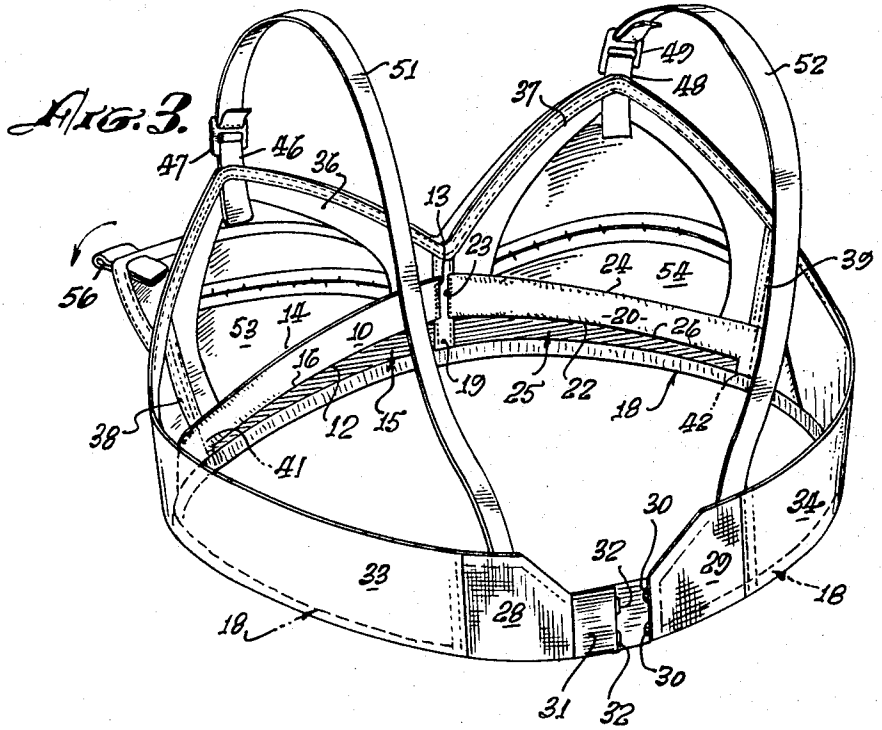


FIG. 3.



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Nov. 5, 1968 A. P. RAMSELL 3,409,017

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Filed May 9, 1966 2 Sheets-Sheet 2

FIG. 2.

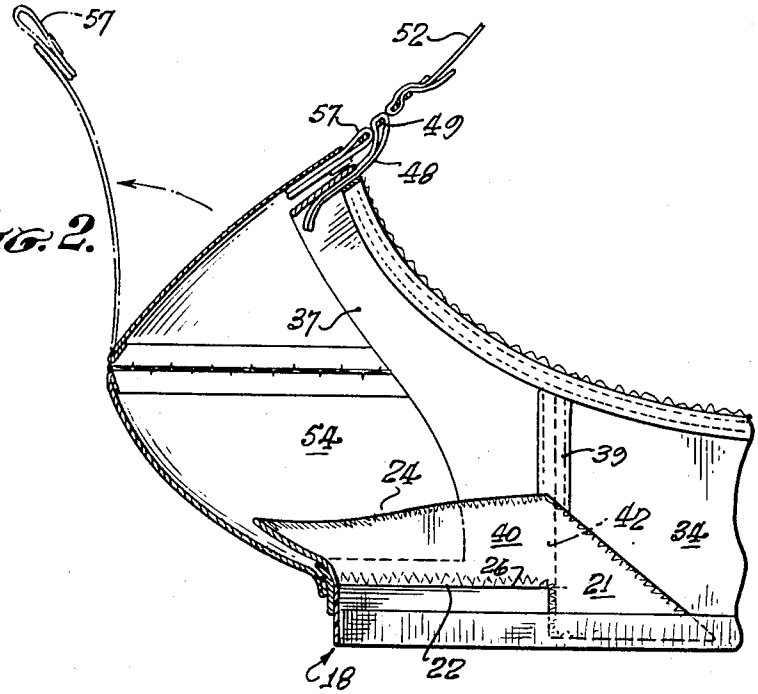


FIG. 4.

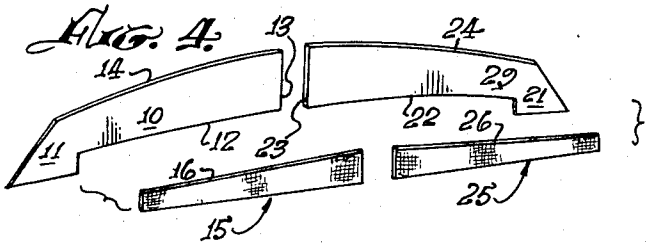
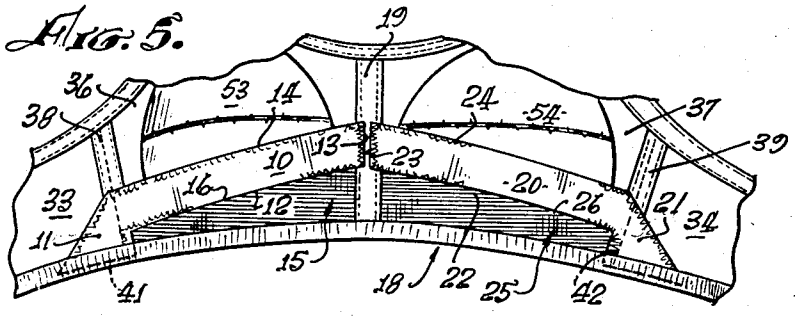


FIG. 5.



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United States Patent Office 3,409,017 Patented Nov. 5, 1968

3,409,017

BRASSIERE

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Filed May 9, 1966, Ser. No. 548,497
7 Claims. (Cl. 128—486)

This invention relates to brassieres and is directed toward an improved brassiere which achieves its bust support characteristics through the application of suspension principles to apply forces to predetermined areas of the wearer's flesh.

More particularly, the invention has reference to a brassiere of the character shown in my U.S. Patent No. 3,213,462, issued Oct. 19, 1965, and specifically relates to improvements thereon. In the brassiere of the above-mentioned patent there is disclosed the concept of creating a desirable bust supporting contour by an inner brassiere structure in which a pair of interconnected chest engaging strips are positioned on the chest immediately beneath the breasts and held in position by means passing around the back of the wearer and interconnecting the free ends of the strips. To the top of each strip is sewn a bust supporting band having an inwardly bowed lower edge surface, stitching of the inwardly bowed bottom edge surface of the bust supporting bands to the straight upper edge surfaces of the chest engaging strips distending the bands to form the desired bust supporting contour.

The present invention brassiere structure utilizes the aforementioned patented basic concept in conjunction with other suspension principles to provide improved bust support and separation.

A truss type of structure is used in the suspension of the bust supporting bands to carry most of the stress developed in the bands and apply this stress in a useful manner to the flesh of the wearer. More specifically, a truss triangle is formed at the end of each band and is positioned at the back ends of the breasts underneath the arms of the wearer, the band stress being carried by a diagonal seam which causes the truss triangle to exert inward, forward, and slightly upward forces on the adjacent flesh to urge more of the breast flesh into the brassiere cups, yet with complete comfort. Since more of the breast flesh is now contained within the brassiere cups a flexure type of seam is used at the juncture between adjacent ends of the bust supporting bands and of the chest engaging strips so that this seam will lay against the chest wall between the breasts, thereby providing desirable breast separation.

Interaction of these aforementioned structural principles results in a brassiere which provides improved figure control and breast separation with complete comfort while containing more breast flesh, which heretofore formed underarm bulges, in the brassiere cups.

Accordingly, it is an object of the present invention to provide an improved brassiere.

It is also an object of the present invention to provide a brassiere which will comfortably support the breasts while giving improved figure control.

It is another object of the present invention to provide an improved brassiere which supports more of the breast flesh, yet in complete comfort.

It is a further object of the present invention to provide a brassiere which supports more of the breast flesh, yet with improved breast separation.

It is still another object of the present invention to provide a brassiere which achieves its bust support characteristics through the application of suspension principles to apply forces to predetermined areas of the wearer's flesh.

It is a yet further object of the present invention to provide an improved brassiere utilizing a truss type of structure to carry developed stresses and apply them in a useful manner to the flesh of the wearer.

It is also an object of the present invention to provide an improved brassiere utilizing a flexure type of central seam to insure adequate breast separation.

The novel features which are believed to be characteristic of the invention, both as to its organization and method of operation together with further objects and advantages thereof, will be better understood from the following description considered in connection with the accompanying drawing in which the invention is illustrated by way of example. It is to be expressly understood, however, that the drawing is for the purpose of illustration and description only, and is not intended as a definition of the limits of the invention.

In the drawing:

FIGURE 1 is a frontal perspective view of a brassiere shown in position for use;

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

FIGURE 3 is a rear perspective view of the brassiere of FIGURES 1 and 2, showing one of the brassiere cups partially folded downwardly;

FIGURE 4 is an exploded perspective view of the bust supporting bands and chest engaging strips of the brassiere; and,

FIGURE 5 is a rear view of a central portion of the brassiere.

Turning now to the drawing, in FIGURE 4 there is shown an exploded perspective view of the bust supporting bands and chest engaging strips which form the basic bust supporting structure of the present invention brassiere, these pieces being shown in a flattened form to indicate the shape of the pattern to be used in cutting these pieces from the material. The illustrated bust supporting bands and chest engaging strips are shown for a 34–B brassiere size, this size being the standard pattern size in the industry. It is understood that other cup sizes are graded from this basic pattern, the larger cup sizes having relatively thicker bust supporting bands and chest engaging strips, while the bands and strips for smaller cup sizes will be slightly narrower. However, those skilled in the art will appreciate the various pattern modifications necessary to apply the present invention concepts to various other brassiere sizes.

The pair of complementary bust supporting bands are generally indicated by the reference numerals **10** and **20**, the bands being formed of a flexible fabric material. The bust supporting band **10** has a triangular end portion and an elongate portion defining an inwardly bowed lower edge surface **12**, a substantially straight end surface **13** and a slightly convex upper edge surface **14**. The bust supporting band **20** has a triangular end portion **21** and an elongate portion defining an inwardly bowed lower surface **22**, a substantially straight end surface **23** and a slightly convex upper edge surface **24**. The lower edge and upper edge surfaces of the bust supporting bands are slightly convergent away from the end surfaces, the degree of convergence, or a divergence in some cases, being dependent upon cup size, in order to provide proper support. The pair of complementary chest engaging strips are generally indicated by the reference numerals **15** and **25**, these strips being preferably fabricated from elastic so that the strips can stretch longitudinally. The chest engaging strips **15** and **25** have substantially straight upper edge surfaces, respectively indicated by the reference numerals **16** and **26**. To assemble each bust supporting band to its chest engaging strip the material of the band and strip is distorted so that the lower edge surface of the band and the upper edge surface of the strip are substantially straight lines, these edge surfaces then being placed in slightly overlapping relationship and the pieces stitched together. The

bands **10** and **20** are thus distended whereby they assume a somethat curved configuration to give them a desired bust supporting contour in accordance with the principles described in my aforementioned patent.

In FIGURE 3 of the drawing there is shown a perspective view of a presently preferred brassiere embodiment, clearly illustrating the manner in which the bust supporting bands and chest engaging strips are incorporated into the brassiere structure. A narrow body encircling band **18**, preferably of elastic, is provided to encircle the chest of the wearer and to define the bottom edge of the brassiere structure. Elastic gussets **28** and **29** are provided at the respective end portions of the body encircling band **18**, the end of the gusset **29** being provided with fastening hooks **30**. A fabric strip **31**, to which are mounted a plurality of eyelets **32**, is stitched to the other end of the band **18** and to the gusset **28** to provide the usual adjustable fastening means.

The lower edge surfaces of a pair of generally trapezoidal back panels **33** and **34** are stitched to band **18**, the shorter end of the panels being stitched to the respective gussets **28** and **29**, the longer end on the panels extending around the back of the wearer to a point beneath the arms. The length of the panels **33** and **34** is determined by the brassiere size and these panels are designed to extend to the back of the breasts of the wearer.

The lowermost end of a vertically extending fabric strip **19** is stitched to the body encircling band **18** to define the mid point of the brassiere, the strip **19** being centered between the breasts. The lower edge portions of the chest engaging strips and the lower ends of the triangular portions of the bust supporting bands are stitched to the body encircling band **18** on either side of the center strip **19** with the end surfaces **13** and **23** of the bust supporting bands stitched to the strip **19**, as can best be seen in the enlarged fragmentary view of FIGURE 5. It is important that the ends **13** and **23** of the bust supporting bands are individually sewn to the strip **19**, preferably by a zig-zag stitch. This provides an individual hinging action which would not occur if the ends of the bust supporting bands were sewn to each other. This desired hinging action enables the elastic band **18** and the elastic strips **15** and **25** to hold the center strip **19** substantially flat against the chest wall between the breasts, thereby providing desirable bust separation.

At the other end of each of the bust supporting bands the lowermost edge of each of the triangular end portions **11** and **21** (defining the base of a triangle) is stitched to the inside of the body encircling band **18** behind the longer end portion of the adjacent back panel. A vertically extending strip **38** is sewn to the inside of the brassiere, covering the seam at the juncture between the longer end of the back panel **33** and the bust encircling band **36**, a similar vertical strip **39** being stitched to adjoining portions of the back panel **34** and bust encircling band **37**. The bust supporting band **10** is stitched to the strip **38**, the stitching being indicated by the reference numeral **41**. The stitching **41** extends vertically and defines the third side of the triangular end portion **11** of the bust supporting band **10**, as can best be seen in FIGURES 2 and 5. In a similar manner the bust supporting band **20** is stitched to the vertical strip **39**, the stitching being indicated by the reference numeral **42**. In this manner the triangular end portions of the bust supporting bands form truss structures to carry the bust supporting band stresses.

A fabric loop **46** is sewn to the vertex of the bust encircling band **36**, the loop **46** being provided with a buckle **47**. In a similar manner the vertex of the bust encircling band **37** is provided with a loop **48** and a buckle **49**. One end of a shoulder strap **51** is sewn to the elastic gusset **28**, the other end of the shoulder strap being threaded through the buckle **47** to provide an adjustment of strap length. A shoulder strap **52** is connected in a similar manner to the gusset **29** and the buckle **49**.

A pair of identically constructed bust containing cups generally indicated by the reference numerals **53** and **54** are connected together at the central seam **55** (see FIGURE 1). Each of the cups **53** and **54** are fabricated from two or more pieces of material cut and sewn to provide a generally cup-shaped contour, in accordance with well known brassiere practices. However, unlike other brassiere structures wherein these cups provide the bust supporting function of the brassiere, in the present invention brassiere these cups perform primarily a bust containing function, the cups being stitched to the brassiere proper only along their lowermost and end edges. The vertices of the cups **53** and **54** are provided with respective fabric loops **56** and **57**, these loops being detachably secured to the respective buckles **47** and **48**. The lower edge surface of each of the cups is stitched to the seam between the corresponding bust supporting band and chest engaging strip, as can best be seen in FIGURE 1. The central seam **55** is not secured to the vertical strip **19**, except by the bottom edge stitching of the cups. The outermost edge of the cup **53** is stitched to the large end of the back panel **33** in alignment with the vertical strip **38**, the outermost end of the cup **54** being aligned with the vertical strip **39** and stitched to the large end of the back panel **34**. Thus, when the cup loops are disengaged from the buckles, the cups can be dropped forward, as shown by the position of the cup **53** in FIGURE 3.

To put the brassiere on, the cups **53** and **54** are dropped to the open position and the brassiere put on by positioning the elastic band **18** about the chest and immediately beneath the breast flesh and the fastening hooks **30** engaged with the proper eyelets **32**. The breasts are manipulated so that the breasts protrude through the openings defined between the bust encircling bands and the bust supporting bands. The shoulder straps are then adjusted and the cups brought up into position and there secured by engaging each of the cup loops with its associated buckle.

Referring again specifically to FIGURES 2 and 3 of the drawing, the manner in which the brassiere provides the desired support can be readily understood. The bust supporting bands **10** and **20**, which are constructed of heavier material than the rest of the brassiere, are positioned at the bottom of the breasts and adjacent the chest wall, whereby the bust supporting bands provide the main support for the breasts. The bust encircling bands and shoulder straps form a harness assemblage which maintains the bust supporting bands in the proper position, the bust encircling strap defining the lateral perimeter of bust confinement. The main band stress is carried by the diagonally stitched seam of the triangular portion of the bust supporting bands. This is different from the ordinary brassiere wherein the bust supporting stresses are distributed throughout the breast cups and the back panels, together with a typical bunching of flesh above the side and back panel. In the present invention brassiere structure, on the other hand, the breast support stress, which is concentrated in the truss triangles at the back of the breasts and underneath the arms, is usefully applied to push the additional breast flesh forward into the brassiere cups instead of bulging upwards. The length of the triangle hypotenuse is not critical, although it has been found that the angle between the hypotenuse and the base of the triangle (along the band **18**) should not be greater than about 60°, in order to provide the desired control. As previously stated, the brassiere cups provide primarily a breast containing function to shape and direct the properly supported breast flesh. It has been found that since more of the breast flesh is now contained within the brassiere cups, a larger cup size is usually required for proper fitting of the present invention brassiere.

A typical problem encountered in brassieres of the larger cup sizes is the difficulty in maintaining the central vertical seam of the brassiere flat against the chest wall between the breasts to achieve desirable breast separation. This problem has been overcome in the present invention

brassiere by individually sewing the ends of the bust supporting bands and adjacent portions of the bust encircling bands to the central strip **19** to provide a hinge type of action which facilitates bending of the material at the seam. In the very large cup sizes the ends of the bust supporting bands will be quite wide (since there is much more breast flesh to support) and extend almost to the top of the vertical strip **19**, whereby the hinge action becomes even more pronounced.

Thus there has been described a brassiere which provides improved figure control and breast separation with complete comfort while containing more breast flesh, which heretofore formed underarm bulges. Although the invention has been described with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and the scope of the invention as hereinafter claimed.

What is claimed is:

1. In a brassiere:

(a) a chest encircling fabric band including means for detachably interconnecting its ends;

(b) a first vertical fabric strip fixedly secured at its lower end to the central portion of said chest encircling band and extending upwards therefrom for disposition between the breasts;

(c) second and third vertical fabric strips fixedly secured at their lower ends to spaced apart portions of said chest encircling band on either side of said first fabric strip for disposition at the back of each breast beneath the arms of the wearer;

(d) a pair of elongate chest engaging strips disposed in end-to-end relationship with their adjacent ends secured to said first vertically extending strip, the bottom edge of each of said chest engaging strips being secured to said chest encircling band and with its outlying end secured to a different one of said second and third vertical strips, each of said chest engaging strips having a substantially straight upper edge surface; and

(e) a bust supporting band for each of said chest engaging strips, each bust supporting band defining a main body portion overlying a chest engaging strip and extending from said first vertical strip to one of said second and third vertical strips, and an irregularly shaped end portion outlying said second and third vertical strips, each of said main body portions having an inwardly bowed lower edge flexibly interconnected with the upper straight edge of the underlying chest engaging strip, each of said end portions defining a lower edge secured to said chest encircling band and a substantially straight upper edge diagonally extending from an upper point at one of said second and third vertical strips to a lower point joining said lower edge at said chest encircling band, said second and third vertical strips being fixedly secured to said bust supporting bands along a substantially vertical line extending from said upper point downwardly to the lower edge of said end portion of the respective bust supporting band.

2. In a brassiere as defined in claim **1**, wherein the adjacent ends of said chest engaging strips and of said bust supporting bands are individually flexibly secured to said first vertically extending strip.

3. In a brassiere as defined in claim **1**, and a pair of bust encircling straps, each of said bust encircling straps having one end portion fixedly secured to said first vertical strip and a remotely disposed other end portion fixedly secured to a different one of said second and third vertical strips.

4. In a brassiere as defined in claim **3**, wherein said one end portion of each of said bust encircling straps are fixedly secured to said first vertical strip from the top of said first vertical strip to the top of said chest engaging strips, and wherein said remotely disposed other end portions of said bust encircling straps are fixedly secured to a different one of said second and third vertical strips from the top of the vertical strip to the top of said chest engaging strip.

5. In a brassiere as defined in claim **1**, wherein the angle between the diagonal top edge and the lower edge of the end portion of said bust supporting bands is not greater than about 60°.

6. In a brassiere:

(a) a chest encircling fabric band including means for detachably interconnecting its ends;

(b) a first vertical fabric strip fixedly secured at its lower end to the central portion of said chest encircling band and extending upwards therefrom for disposition between the breasts;

(c) second and third vertical fabric strips fixedly secured at their lower ends to spaced apart portions of said chest encircling band on either side of said first fabric strip for disposition at the back of each breast beneath the arms;

(d) elongate chest engaging strip secured to said first vertically extending strip, the bottom edge of said chest engaging strip being secured to said chest encircling band and with its outlying ends secured to a different one of said second and third vertical strips, said chest engaging strip having an upper edge surface;

(e) at least one bust supporting band for said chest engaging strip, said bust supporting band defining a main body portion overlying a chest engaging strip and extending from said vertical strip to one of said second and third vertical strips, and

(f) an irregularly shaped end portion outlying at least one of said second and third vertical strips, said main body portion having a lower edge interconnected with the upper edge of the underlying chest engaging strip, said end portion defining a lower edge secured to said chest encircling band and an upper edge diagonally extending from an upper point at one of said second and third vertical strips to a lower point joining said lower edge at said chest encircling band, one of said second and third vertical strips being fixedly secured to said bust supporting band along a substantially vertical line extending from said upper point downwardly to the lower edge of said end portion of the respective bust supporting band.

7. In a brassiere:

(a) a chest encircling fabric band including means for detachably interconnecting its ends;

(b) a first vertical fabric strip fixedly secured at its lower end to the central portion of said chest encircling band and extending upwards therefrom for disposition between the breasts;

(c) second and third vertical fabric strips fixedly secured at their lower ends to spaced apart portions of said chest encircling band on either side of said first fabric strip for disposition at the back of each breast beneath the arms;

(d) a pair of elongate chest engaging strips disposed in end-to-end relationship with their adjacent ends secured to said first vertically extending strip, the bottom edge of each of said chest engaging strips being secured to said chest encircling band and with its outlying end secured to a different one of said second and third vertical strips, each of said chest engaging strips having an upper edge surface;

(e) a bust supporting band for each of said chest engaging strips, each bust supporting band defining a circling band, said second and third vertical strips being fixedly secured to said bust supporting bands main body portion overlying a chest engaging strip

and extending from said first vertical strip to one of said second and third vertical strips, and

(f) an irregularly shaped end portion outlying said second and third vertical strips, each of said main body portions having a lower edge interconnected with the upper edge of the underlying chest engaging strip, each of said end portions defining a lower edge secured to said chest encircling band and an upper edge diagonally extending from an upper point at one of said second and third vertical strips to a lower point joining said lower edge at said chest en- along a substantially vertical line extending from said

upper point downwardly to the lower edge of said end portion of the respective bust supporting band.

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PO-1050
(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,409,017 Dated November 5, 1968

Inventor(s) A.P. RAMSELL

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Claim 7 (f), line 11, after "en-" add --circling band, said second and third vertical strips being fixedly secured to said bust supporting bands--.

SIGNED AND
SEALED
FEB 9 1971

(SEAL)
Attest:

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