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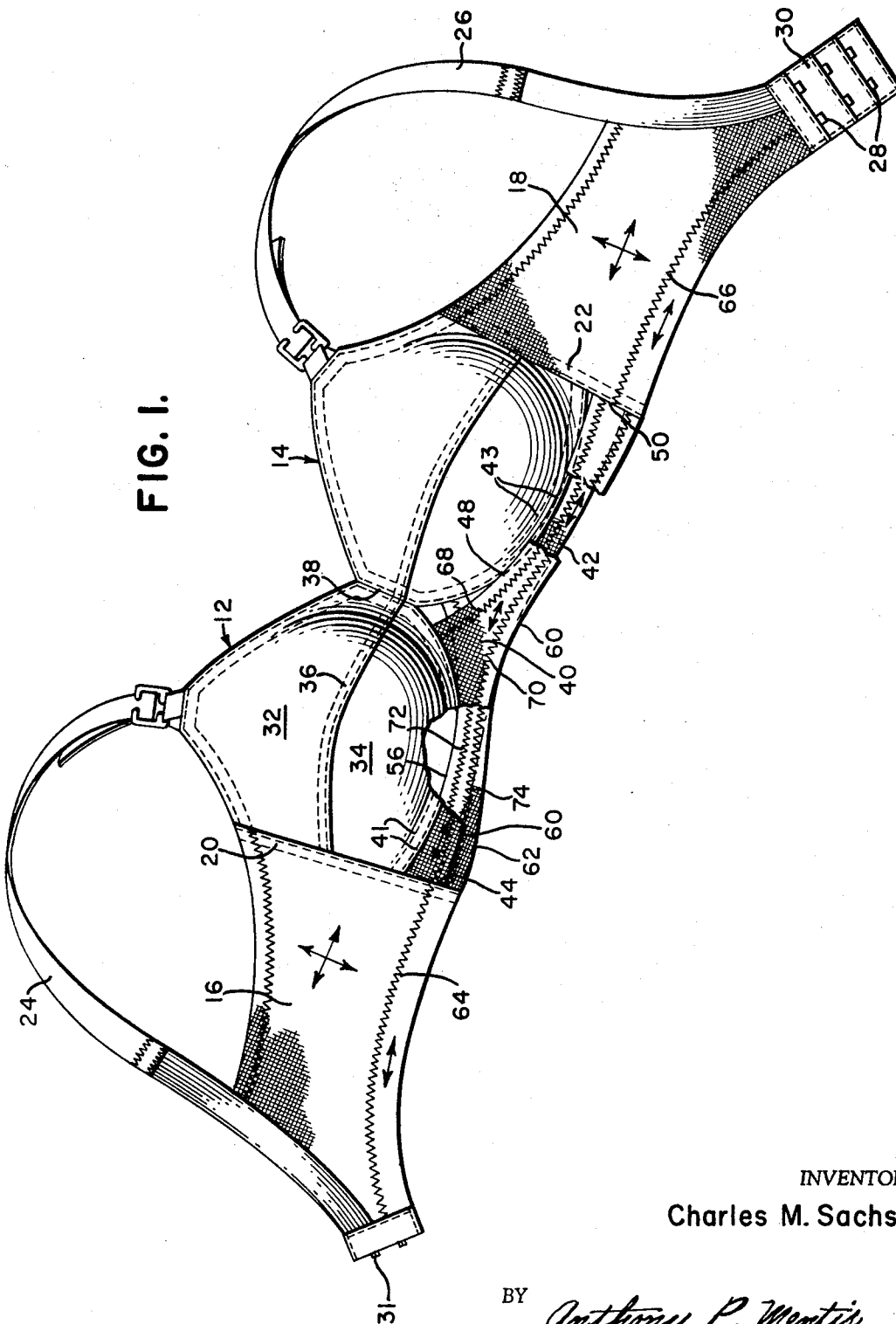
C. M. SACHS

3,393,681

ARCHED BANDS BRASSIERE

Filed Nov. 10, 1965

3 Sheets-Sheet 1



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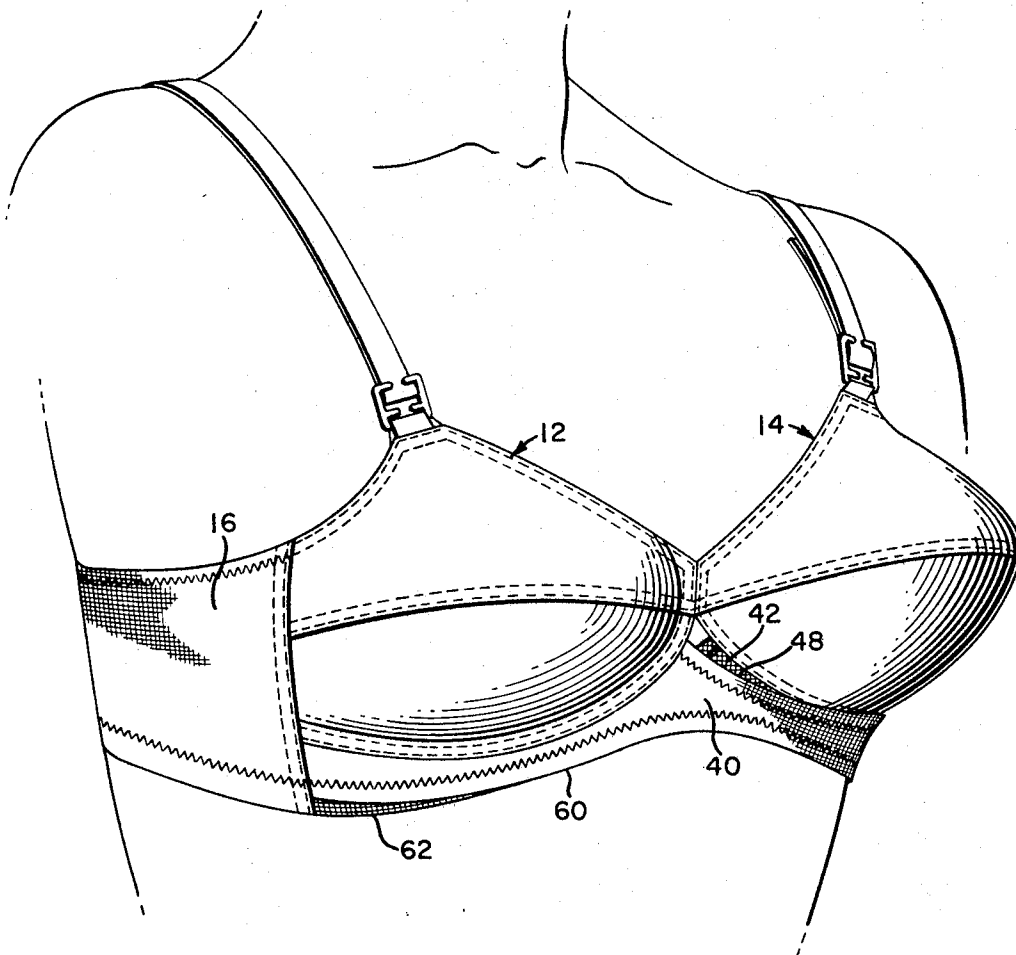
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FIG. 2.



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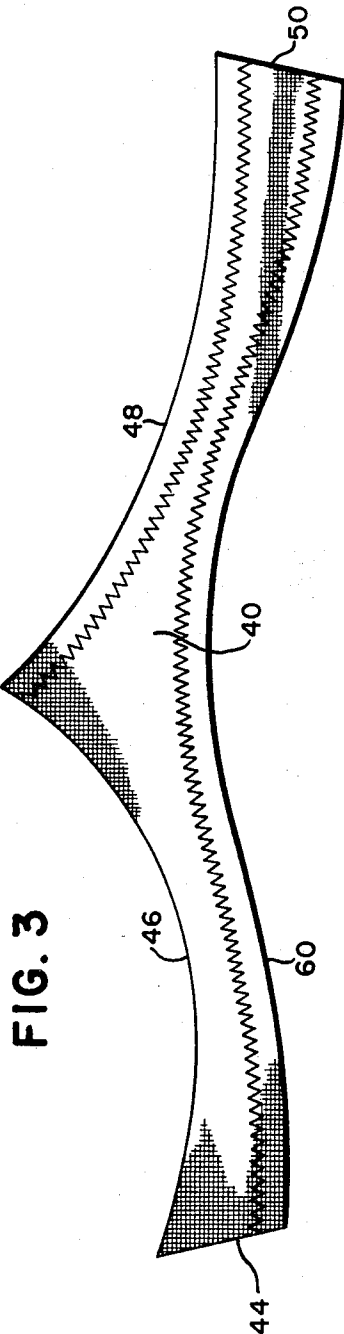
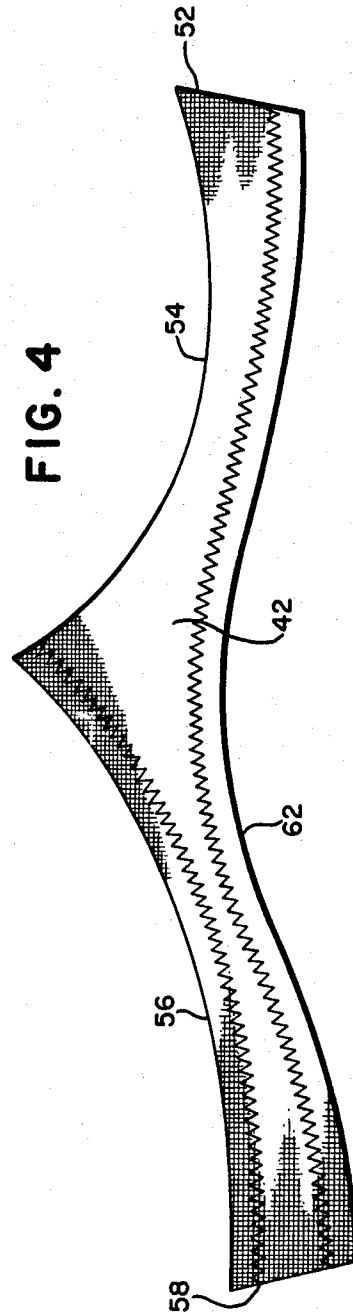
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3 Sheets-Sheet 3



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ARCHED BANDS BRASSIERE

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6 Claims. (Cl. 128-483)

ABSTRACT OF THE DISCLOSURE

This is an improved brassiere of the type having a pair of crossed underbust or diaphragm bands disposed below the cups. The improvement is found in the configuration of each diaphragm band including a novel curvature in the bottom edge of each band whereby gaping, puckering and wrinkling of the bands is minimized.

This invention is an improvement in brassieres having crossed underbust or diaphragm bands of unique characteristics disposed below the cups.

Brassieres with crossed diaphragm bands below the cups comprise a class of brassieres which have found favor with the public and when made with an elastic component in the bands are able to expand and contract easily and comfortably with the movements of the chest. The brassiere of the present invention is a further advance in the art in that it is fashioned to provide a garment which will conform well to the chest structure of the wearer, especially in the middle region of the chest.

Flesh in the general area below the breasts often bunches up and forms a bulge when a woman sits, bends or assumes similar positions. This bulging, particularly in overweight women may be so large that the bottom edge of the wearer's brassiere will cut into the bulge and cause discomfort. The brassiere may also be displaced from its normal position and require readjustment.

The brassiere of the present invention is designed to minimize cutting into such bulging flesh and at the same time to provide a light, dainty and feminine-looking undergarment. It also tends to resist displacement and eliminates superfluous coverage of the middle region of the chest.

Specifically the present brassiere comprises breast cups, back sections with releasably engaging means to hold the brassiere on the body, and two crossed diaphragm bands below the cups which are made in whole or in part of elastic material. Each band is attached to one breast cup and its associated back section and extends across the front to the other back section. Each band has a unique shape, described more fully below, which minimizes gaping, puckering and wrinkling of the bands, and allows the brassiere to conform better to the shape of the chest and to resist riding up.

The accompanying drawings illustrate a presently preferred embodiment of the invention.

FIG. 1 is a front view of a brassiere laid flat.

FIG. 2 is a front perspective view of the brassiere of FIG. 1 as on the wearer.

FIG. 3 is a front plan view of diaphragm band 40 of FIG. 1.

FIG. 4 is a front plan view of diaphragm band 42 of FIG. 1.

Referring to the drawings, FIG. 1 shows right cup 12 and left cup 14 attached to right and left back sections 16 and 18 by seams 20 and 22 respectively. Normally the brassiere will be provided with shoulder straps such as shown by numerals 24 and 26.

Eyes 28 on eye tape 30 cooperate with hooks 31 on back section 16 to hold the brassiere on the body. The cups may be made in any conventional manner, as for

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example, the desired cup shape and fullness may be gotten by preforming cup 12 for instance of two pieces 32 and 34 joined together by horizontal mid-seam 36, and may be of stretch material, non-stretch material or combinations of the two. The two cups are connected together by a short vertical seam 38.

Right breast cup 12 is attached along its lower edge to diaphragm band 40 while left breast cup 14 is attached along its lower edge to diaphragm band 42. Band 40 has a right straight edge 44 (FIG. 3) which is connected to right back section 16 along seam 20. The band 40 has an upper edge portion 46 which is concave in outline and is joined by stitching 41 to the bottom edge of right cup 12 starting at seam 20 and ending at a point which is spaced below the vertical seam 38. From there the remaining upper edge portion 48 of band 40 swings across the center line of the brassiere and extends freely along the bottom edge of the left cup to seam 22. Upper edge 48 approximately coincides with the bottom edge of cup 14. The band 40 is joined along its left side 50 to seam 22.

Diaphragm band 42 has a left straight edge 52 (FIG. 4) connected to left back section 18 along seam 22. The band 42 has an upper edge portion 54 which is concave in outline and is joined by stitching 43 to the bottom edge of the left cup 14 starting at seam 22 and ending at a point which is spaced below the vertical seam 38. From there the remaining upper edge portion 56 of band 42 swings across the center line of the brassiere and extends freely along the bottom edge of the right cup 12 to seam 20. Upper edge 56 generally conforms to the bottom edge of cup 12 and as shown in the cut-out portion of FIG. 1, is free from the bottom edge of cup 12. The band 42 is joined along its right side 58 to seam 20. The two bands are otherwise free from the cups and from themselves and the bottom edges 60 and 62 of the two bands are also free from each other.

Zig-zag stitching 64 joins the lower part of back section 16 to an underlying circumferentially elastic edging tape, not shown. Similarly zig-zag stitching 66 secures the lower part of back section 18 to an underlying circumferentially elastic edging tape, not shown. The two diaphragm bands 40 and 42 have elastic edging tapes on their rear faces, one at the top edge and one at the bottom edge, which are not visible in the figures. Zig-zag stitching 68 joins the band 40 to its upper rear edging tape and zig-zag stitching 70 joins the band 40 to its lower rear edging tape. Band 42 has corresponding zig-zag stitching 72 and 74.

The bottom edge 60 of band 40 is generally concave in shape. Starting from below the right cup 12 at right seam 20, the bottom edge 60 extends under the right cup as a generally straight line in a direction which is substantially perpendicular to seam 20 for about one-half to two-thirds of the horizontal dimension of the right cup. From there it curves upwardly to reach its highest point which is approximately on the vertical midline of the brassiere and at a height which is substantially at the level of a straight line connecting the bottom edges of the two cups. The bottom edge 60 thus starts well below the bottom edge of the right cup and extends upwardly to a point which is at about the height of the bottom edges of the cups. From the highest point of its reach, bottom edge 60 curves downwardly under left cup 14 and ends at left seam 22. The bottom edge 60 extends as a generally straight line under left cup 14 for about one-fifth of the horizontal dimension of cup 14 and for that distance is substantially perpendicular to seam 22. The bottom edge 62 of band 42 is similarly but reversely corresponding.

It will be noted that the top and bottom edges of band 40 are curved so that two relatively narrow and con-

stricted areas are created on the band. The first of these occurs at the region where the vertical mid-line of right cup 12 meets the band 40, the vertical mid-line being the vertical line which passes through the nipple area of the cup. The second narrow area occurs at the region where the vertical mid-line of left cup 14 meets band 40. The first narrow area is located where the band is attached to the right cup and the second is situated where the band is free from the left cup 14. Band 42 is similar but corresponds reversely.

The bands 40 and 42 are each made of light stretchable fabric, such as elastic leno, with the direction of stretch as indicated by the stretch arrows. The bands may be made of a single expanse of stretchable fabric without vertical seam lines. The unique shape of the bands, each having two narrow, constricted areas in the region of the vertical mid-line of each cup, allows each band to stretch quite easily and comfortably with the lightest of pulls. This contributes to the light and airy feeling engendered in the wearer by the brassiere.

While the bands have been shown to be of one-way stretch material, it is possible to make the bands of fabric, such as power net, which are stretchable in all directions. The bands may, if desired, also be made of a plurality of pieces rather than from a single expanse of fabric at least one of which is stretchable in the circumferential direction. The top and bottom edges of the bands may be faced with elastic tape as is known in the art or not.

The special shape of the bands provides advantages not found in the prior art and to more fully understand the differences between the conventional brassieres and the brassieres of this invention, it will be helpful to briefly describe the anatomy of the chest. In the human body the chest or thorax contains the part of the skeleton known as the rib cage which comprises the spine in the back, the ribs on the sides and the sternum or breast bone in the front. The rib cage is conical in shape, being narrow above and broad below, and its anterior surface is flattened or slightly convex, being inclined from above downward and forward. The cartilages of the seventh, eighth, ninth and tenth ribs ascend in the front on either side and form an angle, the subcostal angle, into the apex of which the xiphoid process of the sternum projects, the xiphoid process being the lower part of the sternum. The middle part of the sternum is the body or gladiolus which is generally flat and extends from its point of attachment to the seventh rib upwardly to its point of attachment to the second rib. The mammary region of the rib cage encompasses the space between the third and sixth ribs on either side and the area of the body subtended by the subcostal angle may be referred to as the subcostal region.

The outline of the ascending portions of the seventh through the tenth ribs forms an arch which begins low on either side and rises to its highest point in the center in the area of the sternum. The brassiere of this invention similarly has an outline in its bottom edges which starts low and rises on either side to a high point in the middle. It thus tends to follow the arch of the ribs in the highest area which is a departure from all other brassieres having crossed diaphragm bands of which the inventor is aware. By virtue of this approximate congruity the bottom edges of the instant brassiere present less of a straight edge to contact and cut into the bunched up flesh of the wearer when she assumes positions which create such bunching up. Chafing and irritation of the skin and other discomfort are minimized.

The narrow, constricted areas of the bands in association with the arched bottom edges unexpectedly produce a further advantage in that puckering and wrinkling of the bands are minimized. While the rationale of this effect is not fully understood, applicant believes it is due at least in part to the smoother lines of force which are provided in the present brassiere than in prior art garments where the bottom edges of the crossed bands in

the middle area of the bra are essentially straight. Additional advantages are that the brassiere appears to hug the surface of the body better in the middle and minimizes gaping in that area. The brassiere also tends to remain better fixed upon the body with less riding up and because the crossed bands cover less of the body in the subcostal region the brassiere is more dainty and feminine in appearance.

The other sections of the brassiere may be varied as to fabrics and elastic characteristics, etc., but preferably the back sections are made of elastic material also as shown by the stretch arrows.

Various changes and different embodiments of the brassiere may be made and it is intended that all such are to be included within the scope of the claims.

I claim:

1. In a brassiere, the combination comprising two breast cups joined to:

two back sections adapted to releasably engage the brassiere on the body of the wearer, and
two crossed diaphragm bands of stretchable fabric disposed below the cups,
each diaphragm band having:

a first side edge connected to a first of said back sections,
a top edge connected to the bottom edge of the adjacent first cup,
a free top edge which extends under the second cup,
a second side edge joined to the second of said back sections, and
a free bottom edge which starts from below one cup and curves upwardly to its highest point approximately on the vertical midline of the brassiere and then curves downwardly to below the other cup,
the said highest point being at a height which is substantially at the level of a straight line connecting the bottom edges of the cups,
each of said bands having a relatively narrow and constricted area in the region of the vertical midline of each cup.

2. The combination set forth in claim 1 wherein each free bottom edge extends below the said first cup as a substantially straight line for about one-half to two-thirds of the horizontal distance of the cup before it curves upwardly and extends below the second cup as a substantially straight line for about one-fifth of the horizontal distance of the second cup.

3. The combination set forth in claim 1 wherein the bands are made of a single expanse of elastic fabric without vertical seam.

4. In a brassiere, the combination comprising two breast cups joined to:

two back sections adapted to releasably engage the brassiere on the body of the wearer, and
two crossed diaphragm bands of stretchable fabric disposed below the cups,
each diaphragm band having:

a first side edge connected to a first of said back sections,
a top edge connected to the bottom edge of the adjacent first cup,
a free top edge which extends under the second cup,
a second side edge joined to the second of said back sections, and
a free bottom edge which starts from below one cup and curves upwardly to its highest point approximately on the vertical midline of the brassiere and then curves downwardly to below the other cup,
the said highest point being substantially at the height of the bottom edges of the cups,

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each free bottom edge extending below the said first cup as a substantially straight line for about one-half to two-thirds of the horizontal distance of the cup before it curves upwardly and extends below the second cup as a substantially straight line for about one-fifth of the horizontal distance of the second cup, each band being constricted and narrowest in the region of the vertical mid-line of each cup and each being made of a single expanse of stretchable fabric.

5. A brassiere of the type having a pair of underbust bands crossing each other in the center of the brassiere each band having at least one portion which is stretchable in the circumferential direction, in which:

each band has a bottom edge which starts below one breast cup and curves upwardly to its highest point approximately on the vertical midline of the brassiere between the cups and then curves downwardly below the other cup,

the said highest point being at a height which is substantially at the level of a straight line connecting the bottom edges of the cups.

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6. A brassiere of the type having a pair of underbust bands crossing each other in the center of the brassiere each band having at least one portion which is stretchable in the circumferential direction, in which:

each band has a bottom edge which starts below one breast cup and curves upwardly to its highest point approximately on the vertical midline of the brassiere between the cups and then curves downwardly below the other cup, each of said bands further having a relatively narrow and constricted area in the region of the vertical midline of each cup.

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ADELE M. EAGER, *Primary Examiner.*