July 21, 1964 S. DAVIDSON 3,141,457

LOWER TORSO GARMENT EMBODYING SACROILIAC SUPPORTING WAIST BAND

Filed July 12, 1963

FIG. 1.

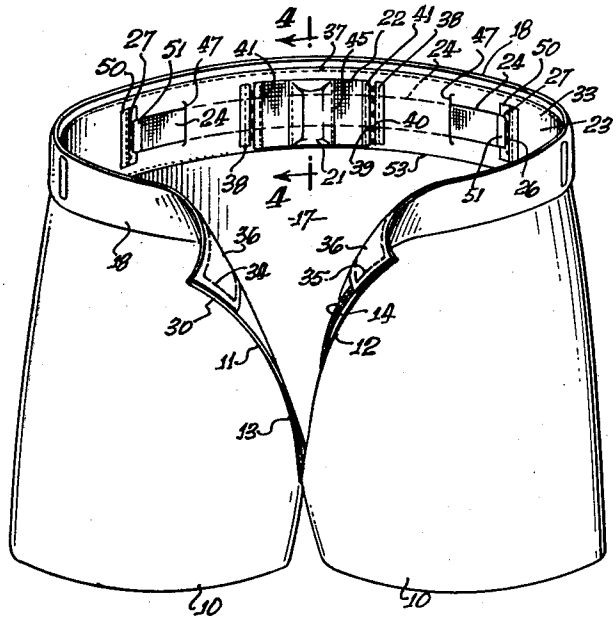


FIG. 4.

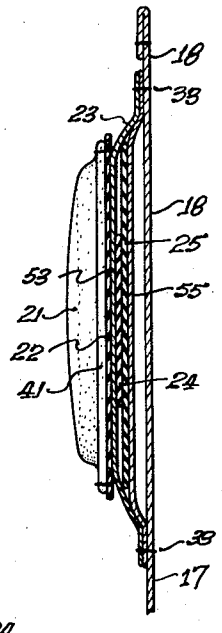


FIG. 2.

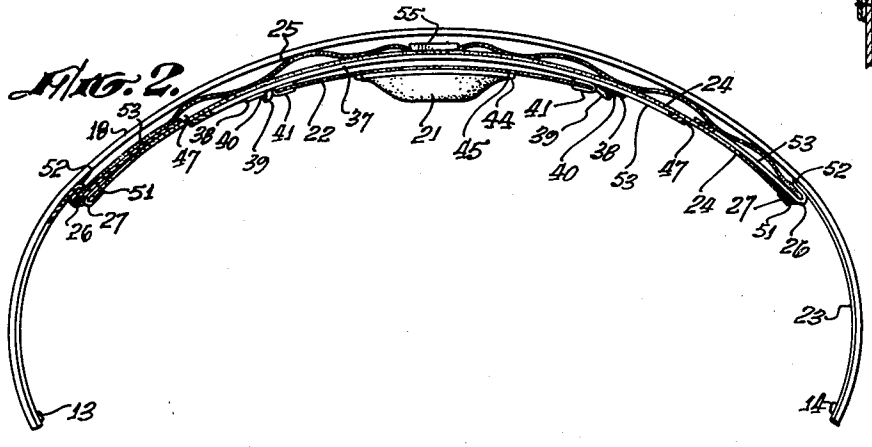
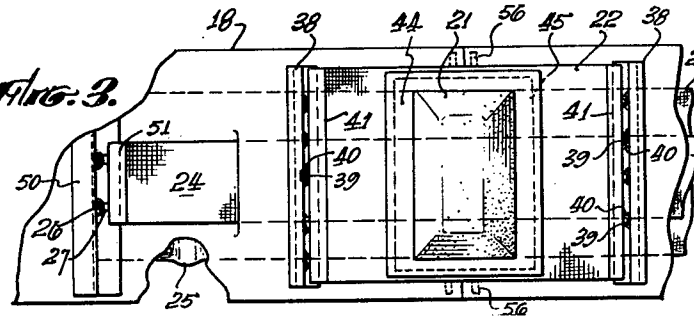


FIG. 3.



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LOWER TORSO GARMENT EMBODYING SACROILIAC SUPPORTING WAIST BAND

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8 Claims. (Cl. 128—95)

This invention relates to sacroiliac supports embodied in the waist bands of lower-torso garments such as pants, shorts, skirts etc.

The invention embraces the following objects:

(1) To provide an improved sacroiliac supporting band in a pants or shorts or skirt type garment or undergarment.

(2) To provide such a supporting band in a garment which is comfortable when worn.

(3) To provide such a supporting band adapted to provide maximum support to the back of the wearer in the sacroiliac region.

(4) To provide such a supporting band combining maximum support with maximum comfort to the wearer.

Other objects and advantages will become apparent in the ensuing specification and appended drawing in which:

FIG. 1 is a perspective view of a garment embodying my improved sacroiliac supporting band;

FIG. 2 is a plan view of the same;

FIG. 3 is a fragmentary elevational view of the central portion of the band in the back; and

FIG. 4 is a vertical sectional view taken on line 4—4 of FIG. 1.

Referring now to the drawings in detail, I have shown therein, as an example of one form in which the invention may be embodied, a pair of shorts having my improved sacroiliac support band embodied in the waist band thereof.

In this embodiment, the garment comprises a pair of relatively short leg elements **10** having, in the front of the garment, a pair of flies **11, 12** provided with suitable closure means such as the elements **13, 14** or a zipper type fastener. Such conventional structure also includes, in the back, a seat panel **17** bridging between and integrally joining the rear portions of the leg elements **10** and a conventional waist band **18** integrally joined to the upper margin of the garment by suitable stitching.

With the basic garment described above, the invention combines a supporting band structure comprising a cushion-like pad **21** supported on the front face of short mounting web **22** of elastic webbing commonly referred in the clothing art as "elastic"; a liner band **23** substantially coextensive with the waist band **18** in circumferential length, the ends of the mounting web **22** being detachably anchored to the liner band **23** at positions spaced laterally on either side of the center of the back of the garment; a relatively narrow tension band **24** having ends detachably anchored to the liner band **23** at respective sides just rearwardly of the lateral extremities of the garment as worn; and a relatively wide tension band **25** likewise anchored to the liner band **23** on vertical lines at substantially the same lateral positions as the narrow tension band **24**. Tension bands **24** and **25** are separably anchored by suitable separable fasteners **26, 27**.

Where the invention is embodied in a separate belt to be worn as an insert, the forward ends of liner band **23** are provided with suitable releasable fastener means for independent coupling of the ends of the liner band to one another at the front center of the garment. Such separable fastener means may comprise a hook and eye type closure means. Alternatively, the band may be of closed loop form, having elastic webbing in front. Band **23** is secured to the garment by a suitable line or lines of stitching **33** extending around its entire circumference to its ends, where it terminates or is continued vertically downwardly, the respective end portions of the liner band

being secured by vertical lines of stitching at **34** and **35**. The lower margin of the liner band is free of attachment to the garment, providing for maximum freedom of flexing action and yield in the elastic band members **24, 25**.

The liner band **23** is of a soft, pliable, closely woven fabric material, and is substantially non-stretchable though freely flexible. A suitable material is cotton duck or high-count cotton twill. The band **23** has a central back portion **37** defined between vertical reinforcing strips **38** to which the ends of the mounting web **22** are anchored. Such anchorage comprises suitable separable fastener means such as hooks **39** on the ends of mounting web **22**, and eyes **40** anchored to the vertical reinforcing strips **38**. The hooks **39** are suitably anchored to reinforcing strips or seams **41** extending vertically the full height of the respective end margins of narrow elastic band **22**. When the liner band **23** is not fastened around the body of the wearer, the elastic band is shorter in length than the central back portion **37** of the liner band. The differential in length may be anywhere from a ¼ inch to ¾ inch, and substantially this amount of stretch will occur in the mounting web **22** when the liner band **23** is fastened around the wearer's waist, thus placing the web **22** under tension. The pad **21** embodies a casing of stout, closely woven fabric material such as cotton duck or twill of rectangular form as shown in FIG. 1, and a stuffing of cotton batting, kapoc, soft rubber or plastic, or any suitable equivalent material, packed fairly tightly in the casing. The margins **44** of the casing are closed by suitable lines of stitching, and are permanently secured to the short elastic band **22** by vertical lines of stitching **45** spaced from the respective ends of the mounting web **22**. The end portions of web **22** projecting beyond the lateral margins of pad **21** provide sufficient stretch to take up the looseness in the rear central portion **37** of the liner band **23** when the assembly is tightened around the wearer's waist.

The relatively narrow tension band **24** extends through vertical slots **47** in the liner band **23**, approximately midway between the positions of attachment of the ends of band **24** to liner band **23**, and the positions of attachment of the ends of pad mounting band **22** to the liner band **23**. The end portions of narrow tension band **24** are freely slidable in the slots **47**. The ends of tension band **24** are separably anchored to the liner band **23** by suitable separable fastener means such as a pair of hooks **26** secured to suitable vertical end bindings **51** on the ends of band **24**, and cooperating eyes **27** anchored to respective vertical reinforcing strips **50** secured, as by marginal stitching, to the inner face of liner band **23**. Preferably, there are extra eyes **27** normally disposed above and below the eyes to which the hooks **26** are coupled, whereby it becomes possible to shift the coupling from the two central eyes to an upper pair of eyes or to a lower pair of eyes as occasion may require, thus providing a diagonally upward pull or a diagonally downward pull in the exposed end portions of the narrow tension band **24**.

The ends of the relatively wide tension band **25** are permanently anchored to the rear face of liner band **23** by suitable securing means such as vertical lines of stitching joining each end of the band between a respective vertically extending fold **52** in the liner band **23** and the back portion **53** of the liner band extending around the back from one of the groups of separable fastener elements **26, 27** to the other. This back portion **53** of the liner band may consist of two sections joined together by a back center joint piece **55** extending from top to bottom of the band **23**, joined directly to the latter in upper and lower marginal areas above and below the margins of the wide tension band **25**, extending rearwardly of the band **25**, and joined to the latter by spaced vertical lines of stitching **56** (FIG. 3) extending through both the bands **24** and

25 and anchoring their rear central portions to the band 23.

This back portion 53 of the liner band 23 is of greater length than the wide tension band 25 by an amount which may be between ¼ and ½ inch on each side of the central anchor joint 55. The wide band 25, in turn, is of such a length that, when all slack in the narrow band 24 is taken up, there will be looseness in the band 25 to the extent of between ¼ and ½ inch of length on each side of the central anchor joint 55. These relations are such that, when the band is closed around the body of the wearer, initial stretch and tension will be imposed on the narrow band 24 until the slack is taken up in the wider band 25, and thereafter the band 25 will stretch until the remaining slack is taken up in the substantially non-stretchable liner band 23.

In the use of the garment, the pad 21, which projects forwardly from the mounting web 22 to an extent substantially as indicated in FIG. 2, will engage the sacroiliac area of the spine with a cushioning contact sufficient to avoid discomfort, and will apply a gentle forward pressure developed by the tensions in the respective tension webs 24, 25. These tensions, as briefly described, above, will be developed by drawing the waist band around the waist of the wearer and coupling the forward ends of the liner band 23. At this point it should be explained that when the garment is initially obtained it will be fitted to the person who is to wear it, and the degree of aggregate tension developed in the tension bands 24 and 25 and in the mounting web 22 can be regulated at that time to most satisfactorily meet the requirements of the wearer. This can be done by the simple expedient of adjusting the length or positions of the free end portions and of band 23 where anchored to the garment, thus adjusting the aggregate circumference of the liner band 23 when its ends are joined. If the band 23 is long enough, the tension can be confined largely to the mounting web 22 and the narrower tension band 24, with the wider band 25 being in an unstretched or only moderately stretched condition when the band 23 is closed around the wearer's waist. By shortening the band circumference to a selected extent, any selected amount of additional tension, developed in the wider (and more powerful) tension band 25 can be added to the milder tension provided by the narrower band 24, up to the point where the two bands jointly are stretched to a maximum possible extent. Also, it should be noted that the wearer can select a pad most adaptable to his sacroiliac condition (e.g. a soft, medium or hard pad; a thick or thin pad).

Under normal conditions, the garment will be worn with residual stretch remaining in the bands 24 and 25, so that, as the wearer bends his torso or otherwise tends to increase his waist circumference, there will be a corresponding heightening of tension in the bands 24 and 25, such as to release the support provided by the pad 21. This heightening of tension will normally occur in an ascending ratio as the more powerful tension band 25 is increasingly brought into play. The same is true in the adjustment of the band length to the wearer's waist preliminary to the wearing of the garment.

My improved supporting band can be embodied in trousers; shorts; underwear; women's skirts, capris, slacks etc.; girdles, foundation garments and similar garments.

The improved results which are provided by the invention are: supporting the spine and particularly the sacroiliac area; straightening the spine; abdominal support; relieving tension in the back and stomach muscles; and other allied beneficial results, utilizing a sacroiliac support which can either be worn separately or built into wearing apparel for either men or women.

I claim:

1. Sacroiliac supporting means comprising: a lower-torso garment having a waist band; a liner band attached internally to the upper margin of said garment and co-extensive with said waist band; a mounting web disposed in a back central area of said liner band and having its respective ends secured thereto; a resilient pressure-applying support pad secured to the center of said mounting web and projecting forwardly; and tension band means extending circumferentially behind said mounting web between respective side areas of said liner band and anchored to the letter at said respective side areas, said tension band means, when unstretched, being shorter than said liner band to provide slack in the rear portion of said liner band for accommodating stretch of said tension band means; and separable fastener means for coupling the ends of said liner band at the front of the garment, around the waist of a wearer so as to stretch said tension band means, thereby developing tension therein which is applied forwardly against said mounting web and pad, with the slack in said rear portion of the liner band being at least partially taken up.

2. Sacroiliac supporting means as defined in claim 1, wherein said mounting web is of elastic webbing material.

3. Sacroiliac supporting means as defined in claim 2, including separable fastener means on the respective ends of said mounting web and on the inner face of said liner band, for anchoring said mounting web to said liner band.

4. Sacroiliac supporting means as defined in claim 1, wherein said tension band means comprises at least one band of stretchable elastic webbing material having its ends anchored to said liner band at points near the side extremities of the garment when closed around the wearer's body.

5. Sacroiliac supporting means as defined in claim 1, wherein said tension band means comprises at least one tension band of stretchable elastic webbing material having its ends anchored to said liner band at points near the side extremities of the garment when closed around the wearer's body, and further including separable fastener means on the respective ends of said tension band and on the inner wall of said liner band at said side extremities, for detachably anchoring the ends of said tension band to said liner web.

6. Sacroiliac supporting means as defined in claim 1, wherein said tension means comprises a tension band of stretchable elastic webbing material narrower than said liner band, said tension band having a rear central portion disposed between said liner band and the marginal portion of said garment, said liner band having vertical slots spaced from the ends of said mounting web on respective sides of the back center of the garment, and the end portions of said tension band extending through said slots and being anchored to the inner surface of said liner band.

7. Sacroiliac supporting means as defined in claim 1, wherein said tension band means comprises a tension band of stretchable elastic webbing material narrower than said liner band, said tension band having a rear central portion disposed between said liner band and the marginal portion of said garment, said liner band having vertical slots spaced from the ends of said mounting web on respective sides of the back center of the garment, and the end portions of said tension band extending through said slots and being anchored to the inner surface of said liner band; said tension band means further including a relatively wide tension band of stretchable elastic webbing material disposed between said liner band and the upper portion of said garment and having its respective ends permanently anchored to the outer face of said liner band.

8. Sacroiliac supporting means as defined in claim 1, wherein said tension band means comprises a tension band of stretchable elastic webbing material narrower than said liner band, said tension band having a rear central portion disposed between said liner band and the marginal portion of said garment, said liner band having vertical slots spaced from the ends of said mounting web on respective sides, said tension band extending through said slots and being anchored to the inner surface of said

liner band; said tension band means further including a wider tension band of stretchable elastic webbing material disposed between said liner band and the upper portion of said garment and having its respective ends permanently anchored to the outer face of said liner band at positions substantially registering with the positions of attachment of the ends of said narrower tension band to the inner face of said liner band, and further including vertically extending anchor tabs carrying separable fastener elements to which the ends of said narrower tension

band are detachably attached, and common securing means comprising vertical lines of stitching securing said anchor tabs and the ends of said wider tension band to said liner band.

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