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3,097,641

ONE-PIECE BODY PORTION TRUSS

Filed Aug. 4, 1960

3 Sheets-Sheet 1

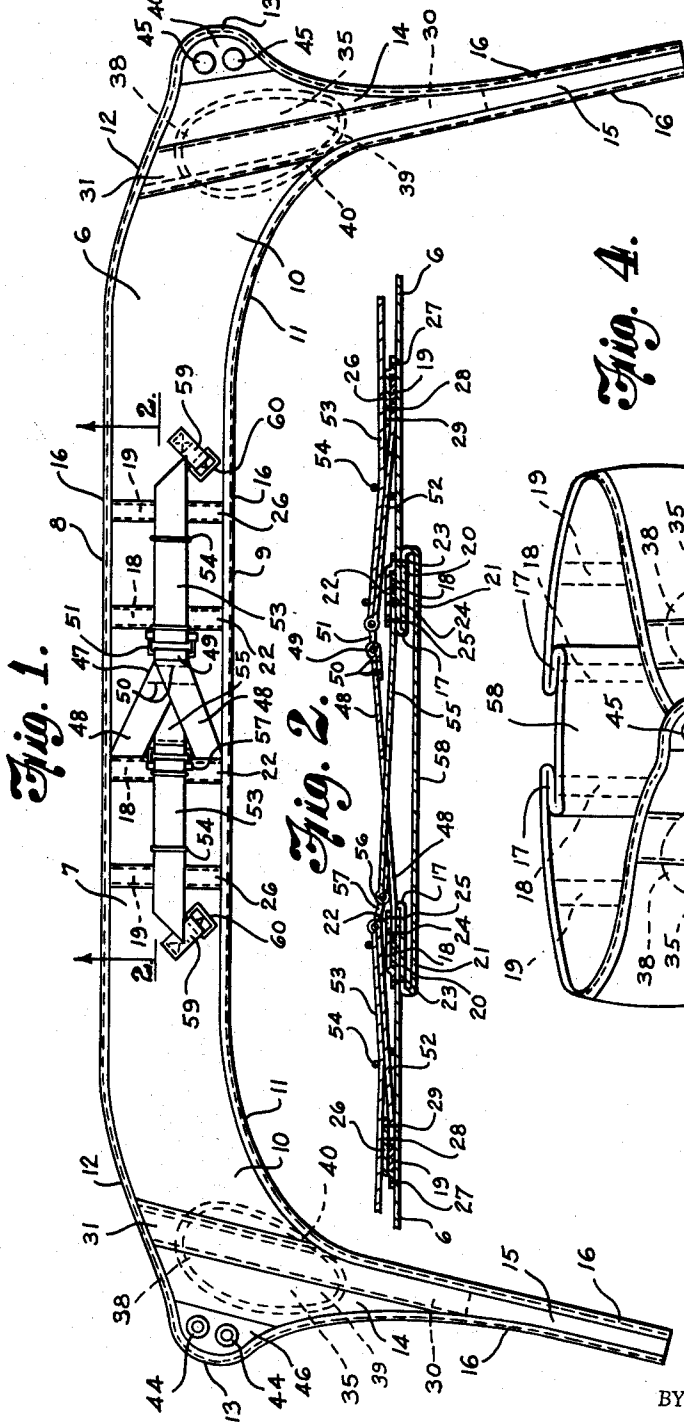
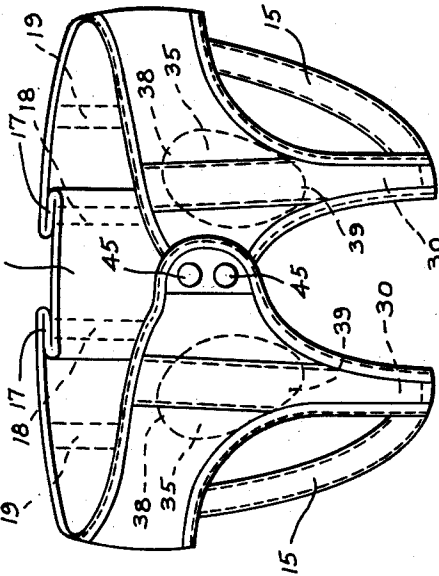


Fig. 4.



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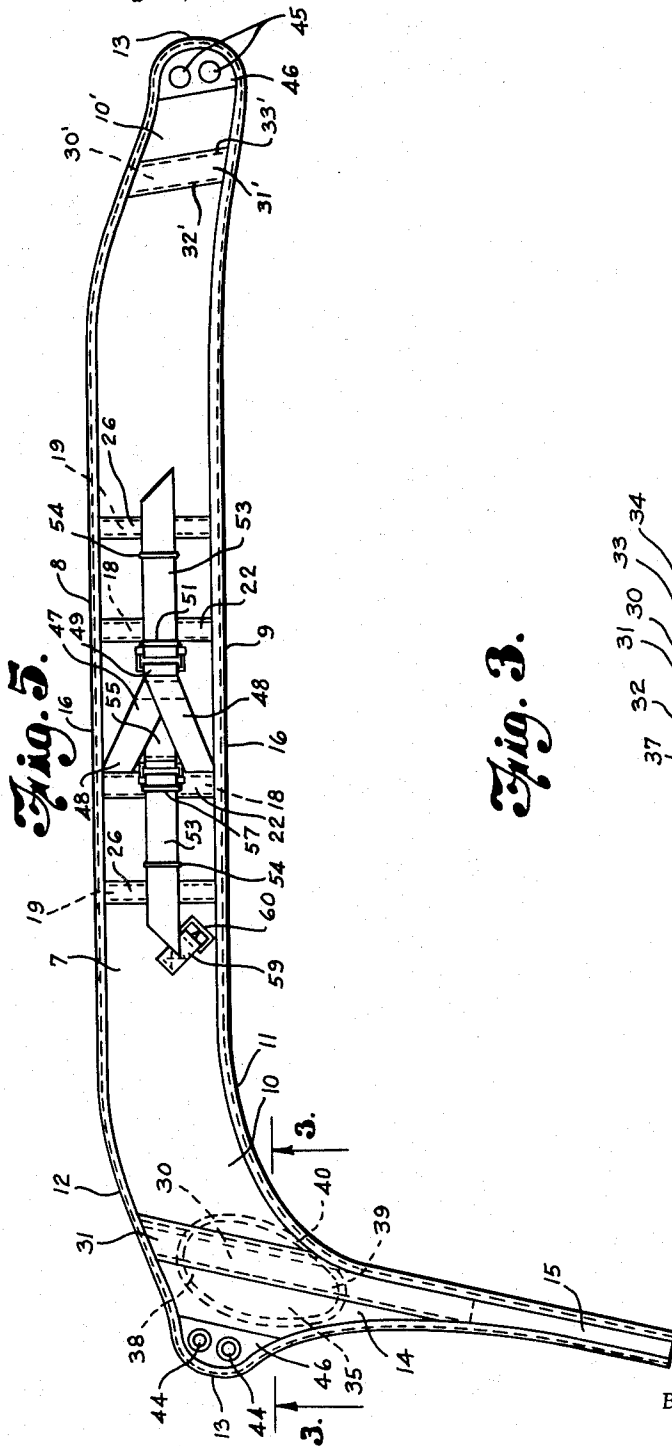
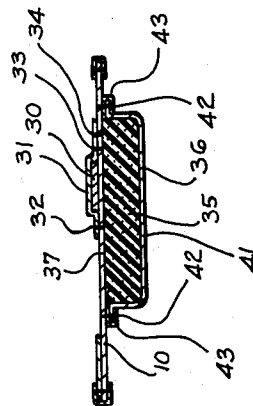


Fig. 3.



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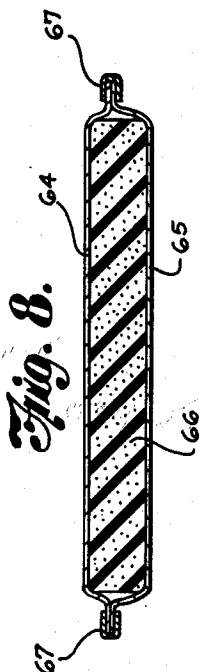
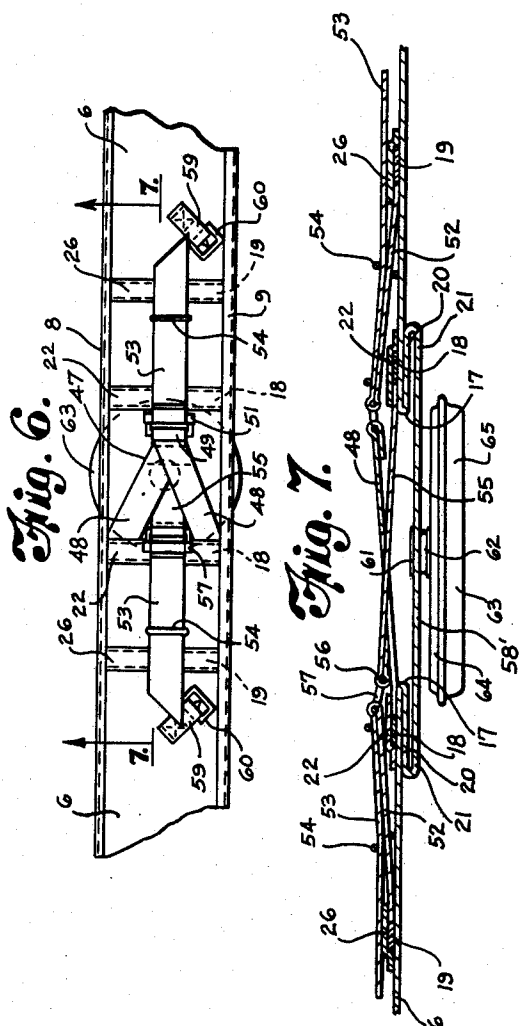
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ONE-PIECE BODY PORTION TRUSS

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2 Claims. (Cl. 128—96)

My invention relates to trusses having a one-piece inextensible body portion and is an improvement over the truss disclosed in the patent to Piper, 2,606,551, patented August 12, 1952.

It is a purpose of my invention to provide a truss that comprises a one-piece body portion of strong flexible woven fabric, said body portion being of such a character that it is inextensible, and which body portion is of such shape that the forward ends thereof curve or incline downwardly with respect to the middle portion thereof, which constitutes the back portion of said truss, the forward ends of said body portion being detachably secured together so that the truss will encircle the body of the wearer.

It is a further purpose of my invention to provide a one-piece flexible body portion for a truss of the above mentioned character, which is provided with a mid-portion that has means for adjusting the effective length of the truss so that it will have a fixed effective length after adjustment, said adjusting means each comprising a pair of flat faced straps or bands, one of which is connected with the body portion in fixed position at a transverse stay, spaced a predetermined distance from the middle of said body portion and the other of which is secured to said body portion at a transverse stay on the other side of the middle of said body portion at a point more widely spaced from the middle thereof than said first mentioned stay, and means for adjustably securing said straps to each other.

It is a further purpose of my invention to provide a truss that is provided with a downwardly curving forward end portion that is provided with a tapering downward extension thereon adjacent said end that has a leg strap extending therefrom, which leg strap is detachably connected at the opposite end thereof with the rear of said body portion at a point spaced a greater distance from the middle thereof than said extension is located from said forward end of said portion and to provide a flat, soft, oval, sponge rubber pad of uniform thickness on the inner face of said downwardly extending end, which pad extends into said tapering extension so that when the truss is adjusted so as to fit closely around the body portion of the wearer and said leg strap is adjusted so as to be drawn tight, the pad will fit under the abdominal bulge of the wearer and thus apply upward and inward pressure of the pad on the body at the point where the rupture most often occurs.

It is a further purpose of my invention to provide such a tapering extension on either or both of said downwardly curved end portions of said body portion and to provide said tapering extensions or extension each with a flat soft oval sponge rubber pad, such as above referred to, and a leg strap adjustably connected with said body portion in the same manner on either or both sides of the middle of said body portion.

By providing a one-piece body portion of the above referred to character the fabric body portion of the truss can be cut from the bolt of material from which the truss is made more easily and faster than when such a truss is made of a pair of body portions that are adjustably connected together at the back portion of said truss. Furthermore, by providing a one-piece body portion, substantially fifty percent of the work required in the manufacture of the truss is avoided over the manufacture of trusses that are provided with two-piece body portions that are

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secured together adjustably by means of laces that pass through eyelets, the positioning of the laces being a hand operation, whereas by the use of straplike bands of fabric that are used for adjusting the effective length of the one-piece body portion these straps can be placed in position on said body portion by a machine operation.

Other advantages of the one-piece body portion are that the assembly of two halves that are not of the same size, is avoided, which is an error that frequently occurs in two-piece body portions of trusses; the finishing operations are reduced from those that are required in a truss made of two pieces that are adjustably connected at the rear of the truss and that have their front ends detachably connected together; and the wearer can more easily and rapidly adjust the truss to properly fit his body. Breakage of laces is avoided and the truss is more comfortable for the wearer because there is a gap in the rear of the truss that would be traversed by laces in a two-piece body portion that tend to irritate the wearer, which is avoided, as the middle of the body portion of my improved truss is continuous and located between the back of the wearer and the adjusting straps utilized by me.

It is still a further purpose of my invention to provide a truss having a one-piece body portion with means for detachably mounting a sacroiliac pad thereon at the mid-portion thereof, whereby said truss serves as a sacroiliac support as well as a truss.

Other objects and advantages of my invention will appear as the description of the drawings proceeds. I desire to have it understood, however, that I do not intend to limit myself to the particular details shown or described, except as defined in the claims.

In the drawings:

FIG. 1 is a plan view of my improved truss.

FIG. 2 is a section taken on the line 2—2 of FIG. 1.

FIG. 3 is a section taken on the line 3—3 of FIG. 5.

FIG. 4 is a perspective view of my improved truss, showing the same in the position it would assume when the end portions thereof are detachably connected.

FIG. 5 is a view similar to FIG. 1, of a modification.

FIG. 6 is a fragmentary inside face view of a modified form of truss.

FIG. 7 is a section taken on the line 7—7 of FIG. 6 on an enlarged scale, and

FIG. 8 is a fragmentary transverse section through the sacroiliac pad on a further enlarged scale.

Referring in detail to the drawings, my improved truss comprises a one-piece woven fabric body portion 6, which has a central portion 7 that is of uniform width having parallel straight marginal edges 8 and 9. Said body portion is made of a woven fabric that is substantially inextensible. Near the opposite ends of said one-piece body portion 6 is a downwardly curved end portion 10, which has a concavely curved lower marginal edge portion 11 and a convexly curved upper marginal edge portion 12 terminating in a convexly curved end edge portion 13, which joins the tapering extension 14 with said downwardly curved end portion 10, said tapering extension 14 extending downwardly at opposite ends of the body portion 6 and having a leg strap 15 extending therefrom.

In order that said body portion is of an inextensible character, a tape binding 16 is provided along each of the marginal edges of said body portion. A fold is provided at 17 extending transversely of the body portion at a point at a spaced distance from the middle thereof on each side of the middle of said body portion, and a stay 18 is provided at said fold so as to stiffen said body portion at the folds provided therein the back thereof. Additional stays are provided in said body portion at 19 at points spaced at a greater distance from the middle of said body portion than said stays 18 and folds 17. Each of the folds 17 is made up of the plies 20 and 21. A strip

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of webbing 22 overlies the fold on the outer side of the truss. The stays 18 are located between the ply 20 and the strip of webbing 22 and a row of stitching 23 connects the plies 20 and 21 and the webbing 22, while rows of stitching 24 and 25 connect the ply 20 and the strip of webbing 22. The stays 19 also have a strip of webbing 26 overlying the same and said strip of webbing is secured to the body portion 6 by means of rows of stitching 27, 28 and 29.

Stays are also provided, extending obliquely in the downwardly curved end portions 10, one of said stays being indicated at 30 in FIG. 3. A strip of webbing 31 overlies each of said stays on the outer side of the body portion and extends into the tapering extension 14 and together with the binding tapes 16 provided along the edges thereof forms the leg strap 15. Said binding strip 31 is secured to the downwardly extending end portion 10 by means of rows of stitches 32, 33 and 34. Secured to the inner face of each of the downwardly curving portions 10 is an oval pad 35. Said pad is provided with opposite flat faces 36 and 37, being of uniform thickness throughout and being preferably made of sponge rubber. Said pad has its longitudinal axis extending slightly obliquely so as to be nearer the end of the truss on which it is mounted at the lower end thereof than at the upper end thereof, and it will be noted that the upper end 38 is spaced slightly from the upper edge 12 of the downwardly curving portion 10 of the body portion of the truss and that the lower end 39 thereof extends into the tapering portion 14 a considerable distance and that the inner edge 40 thereof lies closely adjacent the inner concavely curved edge 13 of the downwardly curving portion 10 where it joins the tapering extension 14. It will also be noted that the stay 30 extends generally longitudinally of the pad 35, extending from substantially the upper edge 38 of said pad to the lower edge 39 thereof. The pad 35 is held in position by means of a ply of soft fabric 41, which is secured to the body portion of the truss by means of a row of stitching 42 extending through the binding tape 43 that extends around the outturned edge of the fabric covering ply 41 as shown in FIG. 3, and through the downwardly curving portion 10 of the body portion 6 of the truss. Cooperating fastening elements 44 and 45 are provided on the downwardly curving portions 10 adjacent the end edges 13 thereof for fastening the said ends together in overlapping relation as shown in FIG. 4 to provide encirclement of the body of the wearer of the truss. Preferably the body portion is reinforced at said fastening elements by a strip of webbing 46 on the outer face thereof.

The means for adjusting the effective length of the body portion 6 comprises a strap 47 that is made of flat webbing and which has diverging leg portions 48 that are secured at spaced points to the body portion at the fold 17 at one side of the body portion, being secured thereto between the ply 20 and the webbing 22 by means of the rows of stitching 24 and 25. Said strap further comprises a loop 49 having rows of stitching 50 across the doubled back portion thereof. The loop 49 receives the buckle 51 to mount it on the strap 47. Cooperating with the strap 47 is a strap 52, which is secured to the body portion 6 between the webbing 26 and said body portion by means of the rows of stitching 28 and 29, and which extends through the buckle and has an end portion 53 extending back toward the stay 19 and is provided with a metal loop 54, through which both the lower portion thereof and the upper portion 53 thereof extend.

The fold 17 on the other side of the middle of the body portion has a strap 55 of webbing secured thereto and between the webbing 22 and the ply 20 by means of stitching 24 and 25 in a similar manner to the end portions of the legs 48 of the strap 47. A loop 56 is provided on said strap 55 for receiving the buckle 57 and a strap 52 is provided extending from the stay 19 in a similar manner to the strap 52 previously described, co-

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operates with the buckle 51 and engages with the loop 54 in the same manner as the strap 52 provided on the other side of the middle of the body portion. It will be obvious that the effective length of the body portion can be adjusted by pulling on the upper ends 53 of the straps 52 until the body portion is of such effective length that the same will fit tightly around the body of the wearer. It will also be noted that the portion 58 of the mid-portion of the main body portion 6 of the truss is located at all times between the straps 48, 52 and 55 and the body of the wearer of the truss so as to protect the body of the wearer from any undesirable contact of said straps with the body.

Said body portion is provided with a pair of tabs 59, that are located at a greater distance from the middle of the body portion than the tapering extensions 14 are spaced from the ends 13 thereof, which are provided with fastening elements 60, such as buckles, for adjustably securing the ends of the leg straps to the rear portion of the truss. It will accordingly be seen that the leg straps 15 extend outwardly toward the back of the truss when it is in body encircling position and the leg straps have been connected with the buckles 60 and adjusted. It will further be obvious that due to the downwardly curved end portions 10, the pads 35 will be on the underside of the abdominal bulge and will push upwardly and inwardly on the body of the wearer.

Instead of providing a tapering extension on both ends of the body portion, such tapering extension may only be provided on one end thereof as shown in FIG. 5, the body portion 6' being made exactly the same as the body portion 6 and the adjusting means therefore being exactly the same as previously described, but instead of providing a tapering extension 14 on both ends of said body portion, the one downwardly curving end 10' thereof is merely provided with a convexly curved end edge portion 13 and with a stay 30' adjacent said end portion and a webbing 31' overlying said stay on the outer side of said body portion of the truss with rows of stitching 32' and 33' securing the webbing to the body portion to confine the stay 30' in an inclined position corresponding to that of the stay 30 provided on the other end of said truss.

In FIGS. 6, 7 and 8 a further modification of my invention is shown, which comprises a truss that has a one-piece body portion, such as described in connection with FIGS. 1 to 4 inclusive, and which is provided with the adjusting means previously described, mounted in the same manner as described in connection with FIGS. 1 to 4 inclusive, and made up of the strap 47 having the diverging portions 48 and the strap 52 having the end portion 53 as well as the strap 55, which is connected with a similar strap 52 having the end portion 53. Said straps are related in the same manner to the body portion 6 and are connected therewith at the same locations and in the same manner as in the previously described form shown in FIGS. 1 to 4, inclusive, and are similarly related as the adjusting straps described in said form shown in FIGS. 1 to 4. The same reference numerals are applied to corresponding parts in FIGS. 6 and 7 as in FIGS. 1 and 2 of the drawing. The body portion is provided with folds 17, previously described, defining the portion 58' at the mid-portion of the main body portion 6 of the truss, which is located between the body of the wearer and the straps 48, 52 and 55 as was the case with the portion 58 between the folds 17 in the form shown in FIGS. 1 to 4 inclusive.

However, instead of providing merely a connecting portion, by means of the portion 58', that protects the body of the wearer from engagement with the pull straps or adjusting members, said mid-portion 58' is provided with a separable fastener that has a portion 61 that is mounted on the member 58' and a portion 62 that is detachably engageable therewith, which is mounted on a sacroiliac pad 63, which is preferably substantially circular in character, and which is provided with a pair of

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cover plies 64 and 65 that enclose the sponge rubber body portion 66 of said pad, having the marginal portions of the plies 64 and 65 stitched together and covered by means of a binding tape 67, the portion 62 of the separable fastener being mounted in any well known manner on the cover ply 64. Thus the sacroiliac pad 63 is detachably mounted on the mid-portion 58' of the truss between the folds 17 of the body portion 6 and will thus be located in the middle of the truss and engaged with the back of the wearer at the middle thereof.

What I claim is:

1. A truss comprising a one-piece body portion of one continuous piece of strong flexible inextensible fabric, means for detachably securing the opposite ends of said body portion together in fixed overlapping relation to encircle the body of the wearer, said body portion having a transverse fold on each side of the middle thereof, a transverse stay extending back of each fold in alignment therewith, a strip of webbing over each stay, stitching securing the plies of the folds together and said webbing thereto, to mount said stays in fixed position with respect to said folds in a position to stiffen said folds vertically and a transverse stay on each side of the middle thereof spaced further from the middle of said body portion than said fold and further from the ends of said body portion than from the middle thereof, pairs of flat faced adjusting straps each pair comprising a strap secured to said body portion at said fold and a strap secured to said body portion across the middle thereof from said fold at said stay spaced further from said middle and means adjustably connecting said straps for adjusting the effective length of said body portion to form a flexible belt of fixed length extending entirely around the body with said adjusting means at the rear of the body and said ends at the front of said body, said body portion between said folds forming an integral shielding member between said straps and the body of the wearer, said body portion curving downwardly toward the opposite ends thereof, a gradually tapering downward extension on said body portion on one of said downwardly curving portions spaced from an end of said body portion, a leg strap extending from said tapering extension, means spaced more widely from the middle of said body portion than said tapering extension is spaced from said end for detachably adjustably securing said leg strap to said body portion, and a flat sponge

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rubber pad of uniform thickness mounted on the inner face of one of the downwardly extending ends of said body portion adjacent the end thereof, said pad being spaced below the top edge of said downwardly extending end and extending into said tapering extension to locate said pad entirely on the under side of the abdominal bulge.

2. A truss comprising a one-piece body portion of one continuous piece of strong flexible inextensible fabric, means for detachably securing the opposite ends of said body portion together in fixed overlapping relation to encircle the body of the wearer, said body portion having a transverse fold on each side of the middle thereof, a transverse stay at each fold extending back of each fold in alignment therewith, a strip of webbing over each stay, stitching securing the plies of the folds together and said webbing thereto, to mount said stays in fixed position with respect to said folds in a position to stiffen said folds vertically and a transverse stay on each side of the middle thereof spaced further from the middle of said body portion than said fold and further from the ends of said body portion than from the middle thereof, pairs of flat faced adjusting straps each pair comprising a strap secured to said body portion at said fold and a strap secured to said body portion across the middle thereof from said fold at said stay spaced further from said middle and means adjustably connecting said straps for adjusting the effective length of said body portion to form a flexible belt of fixed length extending entirely around the body with said adjusting means at the rear of the body and said ends at the front of said body, said body portion between said folds forming an integral shielding member between said straps and the body of the wearer, and a flat sponge rubber pad detachably mounted on the inner face of said shielding member midway between said transverse folds.

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