United States Patent [19]

Mitchell

[11] **3,740,763**

[45] **June 26, 1973**

[54] **FOOTBALL SHOULDER PAD**

[75] Inventor: **Hal D. Mitchell**, Aptos, Calif.

[73] Assignee: **A-t-O Inc.**, Willoughby, Ohio

[22] Filed: **Dec. 22, 1971**

[21] Appl. No.: **210,811**

[52] **U.S. Cl.** **2/2**

[51] **Int. Cl.** **A41d 13/00**

[58] **Field of Search** 2/2, 25

[56] **References Cited**

UNITED STATES PATENTS

3,071,639	1/1962	Foley	2/2
2,071,827	2/1937	Glahe	2/2
2,196,124	4/1940	Smith	2/2
3,509,579	5/1970	Morgan	2/2

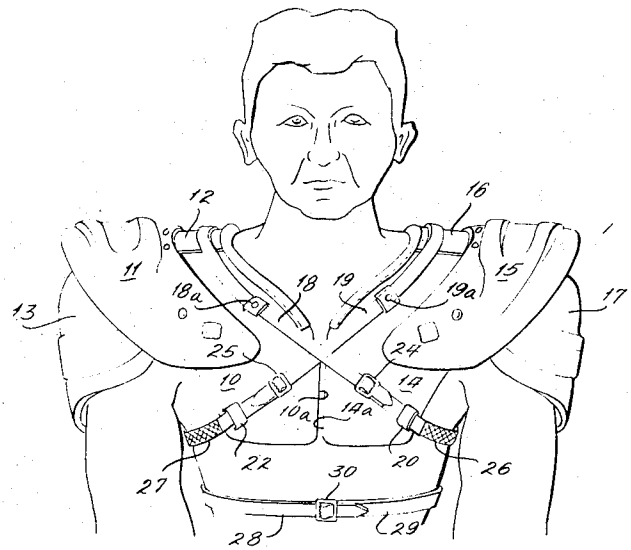
Primary Examiner—Alfred R. Guest

Attorney—Frederic M. Woodruff et al.

[57] **ABSTRACT**

A football shoulder pad and upper torso protective covering in which the assembly is separated into flexibly connected right and left side portions, instead of the usual inflexible unitary assembly, thereby affording greater protection in vunerable areas of the upper torso and shoulders combined with greater flexibility to more nearly conform with the natural movements of the anatomy.

8 Claims, 5 Drawing Figures



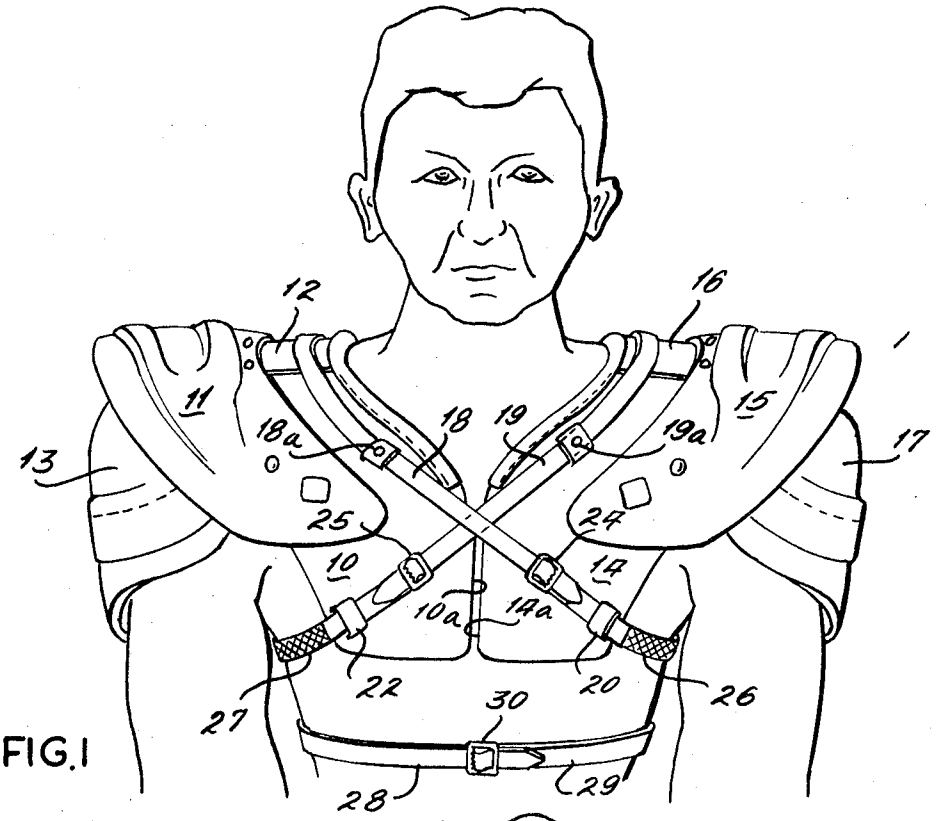

12
16
11
15
18a
18
19
19a
13
17
25
24
10
14
10a
14a
22
20
26
27
30
28
29

FIG.1

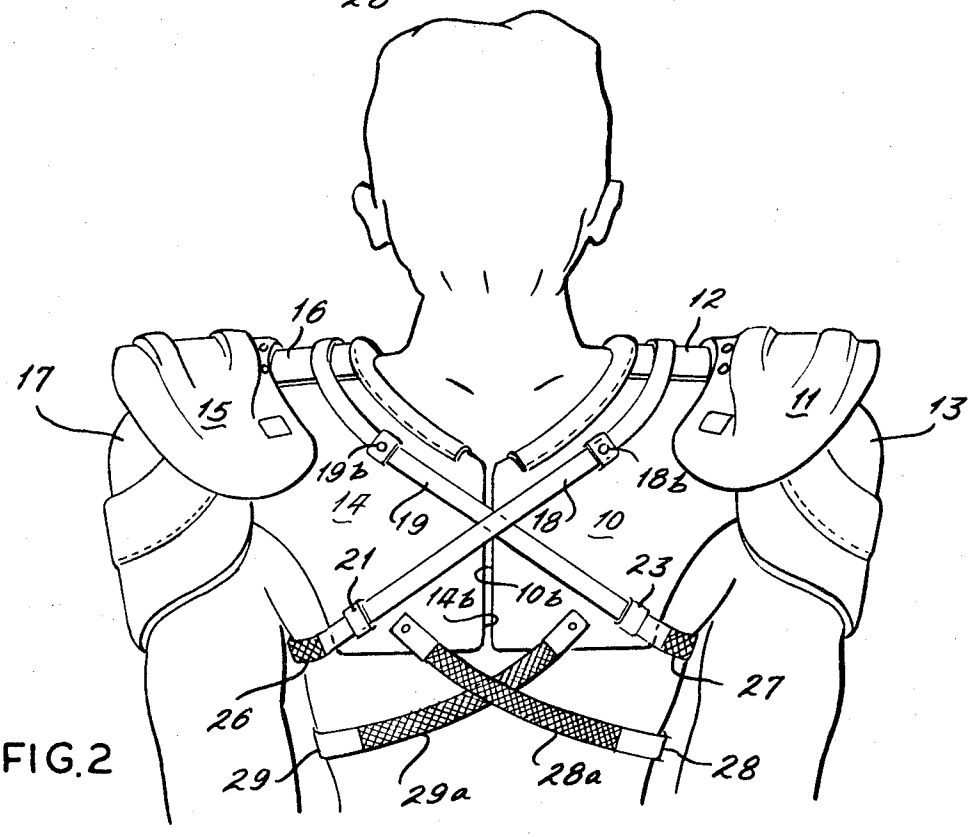

16
12
17
15
11
13
19b
18b
14
19
18
10
21
23
14b
10b
27
26
29
29a
28a
28

FIG.2

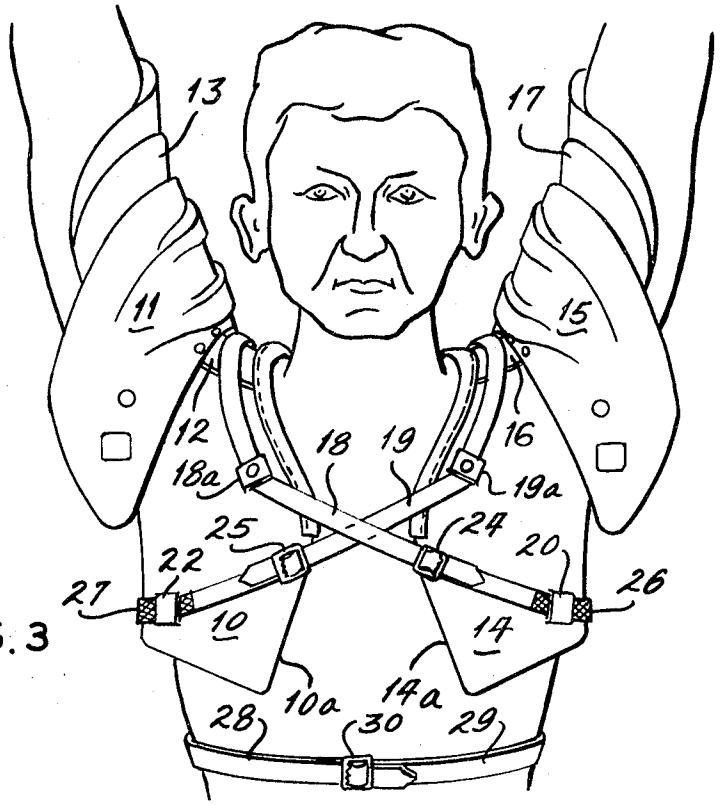

13
17
11
15
12
18
19
16
18a
19a
25
24
20
22
27
26
10
14
10a
14a
28
30
29

FIG. 3

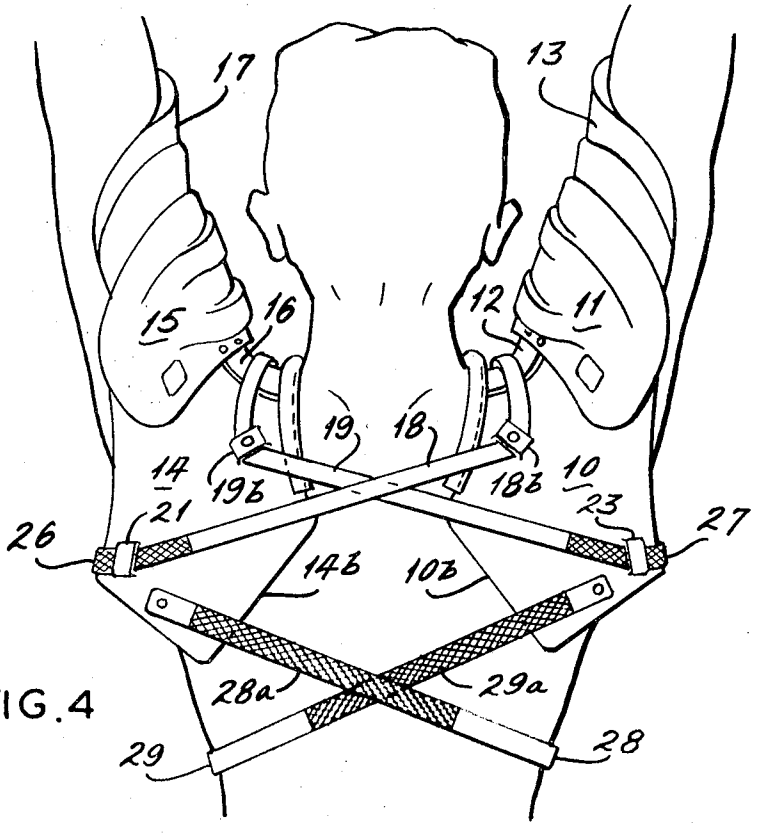

17
13
15
16
12
11
19
18
14
19b
18b
10
21
23
26
27
14b
10b
28a
29a
29
28

FIG. 4

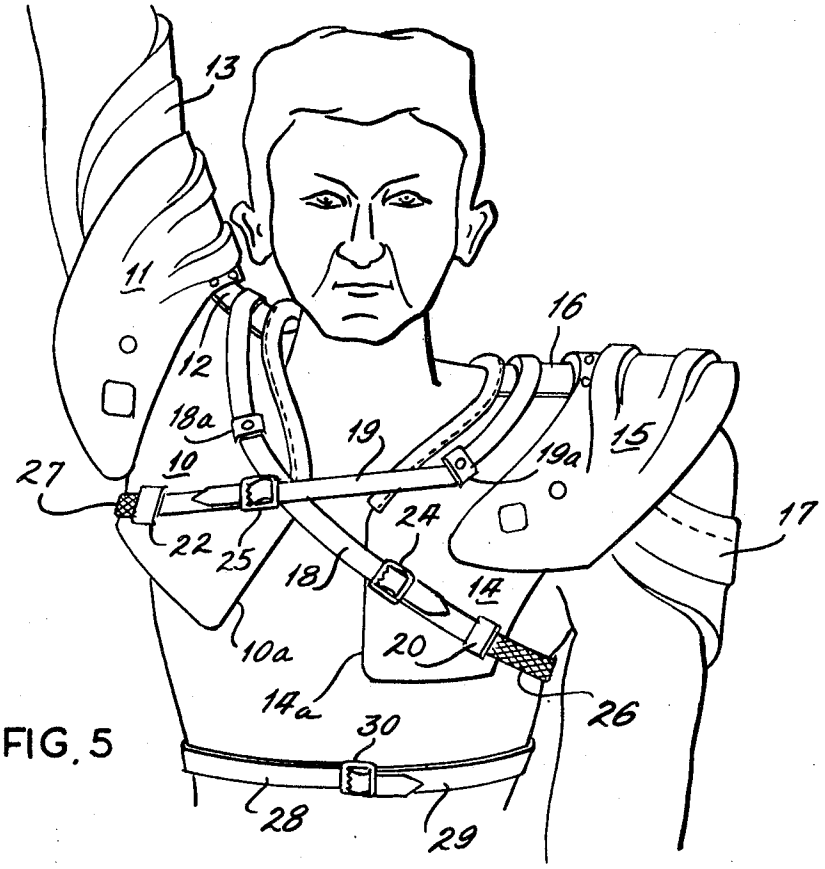

13
11
12
18a
10
27
22
25
18
10a
14a
19
24
20
30
28
29
16
19a
15
17
14
26

FIG. 5

FOOTBALL SHOULDER PAD

BRIEF SUMMARY OF THE INVENTION

This invention relates to football shoulder pads and is particularly directed to athletic protective equipment worn by football players.

The game of football requires well padded clothing and particularly an assortment of protective devices to guard against injury because of the violent bodily contact that is involved. One of the customary protective devices is a specialized piece of equipment in the form of shoulder pads which are traditionally worn over the shoulders and under an outer jersey of the usual uniform.

The shoulder pad protective equipment heretofore available imposes serious difficulties on the wearer because of the traditional concept that the various parts of the shoulder pads must function as a single unit. Therefore, the main portion of the shoulder pad for the right and left shoulders are traditionally laced, pinned, or stitched together at the front as well as in the rear. Consequently, the traditional shoulder pad does not satisfy the natural flexibility of the anatomy and prevents freedom of movement. This is particularly true with the restriction imposed on the arms which cannot normally be raised much above a position approximately horizontal to the ground, for any arm movement to a higher angular position causes the traditional shoulder pad to cut into the wearer's neck which automatically inhibits raising the arms beyond an elevation which experience has shown to cause contact with the neck. It is extremely important in the game of football that each player should have the freedom and ability to move the arms in an upward direction without losing the protection which is otherwise afforded by shoulder pads, and the various existing shoulder pads do not accomplish this desired feature. Furthermore, the traditional shoulder pads with their one piece construction can result in serious injury, because in certain positions of the body and while the traditional shoulder pads are out of normal position, the shoulder joint is vunerable to dislocation and it is thought that the traditional pad, because of its improper action, as a one piece device, actually contributes to shoulder injuries.

The principal objects of the present invention are to eliminate the specific difficulties in mobility and protection now present with traditional shoulder pad constructions, to provide an improved shoulder pad which con-sists in right and left shoulder portions which are sub-stantially free to go with the natural movements of the anatomy, and to provide an improved shoulder pad of great flexibility and in which the right and left shoulder protecting portions are rendered independently flexible by a unique harness and suspension arrangement, therefore permitting the arms to be moved freely above the horizontal and to rotate upwardly without inflicting restricting movement or binding action at any place on the body of the wearer.

A presently preferred embodiment of the invention involves providing right and left shoulder pad sections and an interconnecting harness and suspension system which uses the shoulder pad on one side as a base to control the movement of the opposite shoulder pad, even though both sections may be in motion. Additionally, the preferred embodiment involves the application of a harness that holds the shoulder pads in place on the body but permits the opposing medial borders to rotate

or move away from each other in the front and in the rear areas of the body, thereby achieving freedom of arm movement while maintaining the necessary protective position of the shoulder pad sections.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the present invention has been illustrated in the accompanying drawings, wherein:

FIG. **1** is a front view of the presently improved football shoulder pad when worn in the normal at rest position;

FIG. **2** is a rear view of the improved shoulder pad shown in FIG. **1** and in its normal at rest position;

FIG. **3** is a front view of the improved shoulder pad showing the action of the various components thereof with both arms raised above the head as in a reach position;

FIG. **4** is a view from the rear of the shoulder pad shown in FIG. **3** when the arms are in the raised reach position; and

FIG. **5** is a view similar to FIG. **3** but showing the shoulder pad used with one arm in the raised reach position and the opposite arm in the normal rest position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIGS. **1** and a the improved shoulder pad assembly includes a right body member **10** which is formed of a suitable stiff material and extends from the front chest portion over the right shoulder and down into the back area. The body portion **10** is provided with a cantilever shoulder flap **11** which is suitably connected to the body **10** at the front and rear and by a flexible tab **12** at the top of the shoulder. The cantilever flap **11** partially covers a shoulder cap **13** which affords protection for the outer edges of the shoulder arch of the body **10.** In a similar way the shoulder pad includes a left body member **14** which is the mirror image of the right shoulder body **10,** and this body portion is provided with a cantilever shoulder flap **15** connected at the front and rear to the body **14** and at the top of the shoulder line by a flexible tab **16.** Under the arch **15** there is a shoulder cap **17** suitably connected to the body **14** (not shown). It can thus be seen that the basic components of the right and left shoulder pad assemblies are composed of parts formed from traditional materials and assemblied in generally juxtaposition, as is well illustrated in FIGS. **1** and **2.**

It is observed in FIGS. **1** and **2** that the right and left body portions **10** and **14** respectively have adjacent vertical margins **10***a* and **14***a* which are not interconnected in the usual manner by lacing or other means. Similarly, in FIG. **2,** it is observed that the adjacent vertical margins **10***b* and **14***b* are not in any way interconnected.

In place of the usual interconnecting lacing for the body portions **10** and **14** there is provided a harness arrangement consisting of essentially two parts which are hereinafter being referred to as the suspender straps and the tie-down straps. The suspender straps include two bi-lateral strap members **18** and **19,** suitably made of a nylon webbing and connected by anchors **18***a* and **19***a* in the front portions of the bodies **10** and **14** and at **18***b* and **19***a* at the rear of these bodies. In addition, the suspender strap **18** crosses over the chest of the wearer and is run through a loop **20** at the lower por-

tion of the left side of body **14**, with the strap continuing on under the left arm and upwardly through a second loop **21** at the rear of the body **14** before crossing the back of the body **14** and upwardly to the body anchor means **18***b* on the rear of the body **10**. In a similar way suspender strap **19** extends downwardly across the chest area toward the lower side of body **10** where it is run through loop **22** and continues on under the right arm and upwardly through loop **23** at the back of the body **10** and across the back to the anchor means **19***b* in body **14**. It can be seen in FIG. **1** that the suspender strap **18** is provided with a suitable buckle assembly **24** and similarly the strap **19** is provided with a buckle assembly **25**.

The shoulder pad assembly may be removed by unbuckling the buckles **24** and **25**, respectively, thereby freeing the bodies **10** and **14** for separation, without at the same time permitting the right and left sections to become completely detached from each other because the suspender straps **18** and **19** crossing at the back of body **10** and **14** continue to retain these components connected. It is noted in FIGS. **1** and **2** that the strap **18** where it passes under the left arm is provided with an elastic or stretch insert **26**, and the suspender strap **19** is similarly provided with an elastic or stretch section **27**. The stretch inserts **26** and **27** accommodates a range of sizes of body dimensions and also accommodates the shoulder pads to changes in body dimensions that occurs during activities, such as the rapid in and out movement of the chest due to the exertion of breathing.

Still referring to FIGS. **1** and **2** it can be seen the tie-down straps **28** and **29** (FIG. **2**) have their respective ends connected to the body **14** and **10**. The tie-down straps **28** and **29** cross at the back in the areas of the elastic or stretch inserts **28***a* and **29***a*, and then continue around the waist of the wearer to be joined by a suitable buckle **30** at the front where it can be easily reached.

It is seen in the various views that the suspender straps **18** and **19** begin at their respective attachments **18***a* and **19***a* on the front portions of the neck border of the bodies **10** and **14** and pass across the front face or chest protective areas of the opposite bodies **10** and **14** and through loops **20** and **22** respectively near the lateral inferior angles of the bodies, then continue under the opposite arms and through positioning loops **21** and **23** on the rear faces of the bodies **14** and **10** respectively, then on to points of attachment **18***b* and **19***b* adjacent the rear aspects of the neck borders of the opposite bodies. The attachments **18***a* and **18***b* for strap **18** and **19***a* and **19***b* for strap **19**, respectively, on the front and rear portions of body **10** and **14** locate the straps along the neck borders no nearer the medial border than the lateral line of the neck. The correct positioning of these several attachments **18***a* and **18***b*, and **19***a* and **19***b* is important to the proper flexibility and conformation of the body **10** and **14** with the natural movement of the anatomy. Furthermore, it is important that the two suspender straps **18** and **19** should not have any interconnection at their point of closing in the front as well as in the rear.

Turning now to FIGS. **3** and **4** a player is shown with the presently improved shoulder pad in its action position, with both arms raised above the player's head in the reach position. In FIG. **3** the bodies **10** and **14** are seen to be free to separate so that the margins **10***a* and **14***a*, formerly in closed position as shown in FIG. **1**, are now widely separated to conform to the movement of the anatomy when the arms are raised. Concurrently with the upward rotation and spreading apart of the bodies **10** and **14** it can be seen that the suspender straps **18** and **19** move to more pronounced angular positions relative to the frontal tie-downs **18***a* and **19***a* respectively, whereas in FIG. **1** the suspender straps are shown in a normal nearly linear pull position with respect to the tie-downs **18***a* and **19***a*. The view in FIG. **4** shows the back of bodies **10** and **14** located with the margins **10***b* and **14***b* widely spaced as compared to the rest position shown in FIG. **2**. Also, the suspender straps **18** and **19** are now in a more pronounced angular position relative to the tie-down elements **18***b* and **19***b*.

From the views of FIGS. **3** and **4** it is observed that the suspender straps are attached and extend along the neck borders of the bodies **10** and **14** so as to be outside the lateral line of the neck of the wearer of the shoulder pads. Furthermore, the attachments or tie-downs **18***a* and **18***b*, and **19***a* and **19***b* for suspender straps **18** and **19**, respectively, are so located as to allow movement between the crossed positions of the straps, thereby giving the bodies **10** and **14** unrestricted lateral separating movement so that the protective members **11** and **13** for the right shoulder, and members **15** and **17** for the left shoulder, can easily assume conforming positions with the anatomy of the arms and shoulders of the human body. What is extremely important here is that the edges of the neck regions of the bodies **10** and **14** do not move inwardly far enough to exert a pinching force on the wearer's neck.

The tie-down straps **28** and **29** constitute a separate part of the shoulder pad harness since they are made to stretch and work with the body **10** and **14**, while maintaining the necessary restoring force on the bodies **10** and **14** to bring the shoulder pad assembly back into its normal position when the arms are lowered toward or are in the at rest positions of FIGS. **1** and **2**.

Turning now to FIG. **5** it can be observed that when the right arm is in the raised reach position the body **10** and its cooperating parts **11** and **13** are able to conform to the natural movement of the anatomy in the right shoulder area, using as a base the left body **14**. One of the important operating functions of the suspender straps **18** and **19** is quite evident in FIG. **5**, for here the body **10** is permitted to move independently of the body **14**. Notwithstanding the independence of movement of the body **10** relative to body **14**, it can be appreciated that the suspender straps continuously maintain both of the bodies **10** and **14** in protective position on the portions of the wearer's anatomy that they are primarily designed to protect.

In view of the foregoing description of a presently preferred embodiment of the improved football shoulder pad protective device, it should now be appreciated that the essential components include right and left body portions worn over the respective shoulders and extending down in protective covering relation over the chest and back areas between the right and left arms, and a system of strap means interconnecting the body portions and having a working relation by crossing each other in the chest and back areas, whereby the respective body portions are relatively free and capable of moving independently of each other so as to follow or conform to the natural anatomical configurations into which the wearer's body is free to move. It is also be-

lieved to be clear from the foregoing description that the invention resides in the shoulder pad assembly, as well as in the improvement of a system of strap means interconnecting the respective body portions of the shoulder pad, thereby establishing a cooperative relationship without at the same time restricting independent relative movement.

What is claimed is:

1. In a shoulder protective device for athletic use having right and left side body portions arched over the respective shoulders and extending down over the chest and scapula areas between the right and left arms, the improvement of a system of strap means interconnecting said body portions in crossed relationship and including a right shoulder strap anchored to the right body portion and extending across the left body portion chest and scapula areas, and a left shoulder strap anchored to the left body portion and extending across the right body portion, whereby the respective body portions are relative free to move independently of each other to follow substantially the anatomical configuration.

2. The improvement of claim **1** wherein said strap means includes stretchable portions to allow said strap means to conform individually to changes in the anatomical configuration.

3. The improvement of claim **1** wherein said system of strap means includes suspender straps operably controlling said body portion response to anatomical configuration, and tie-down strap means connected to said body portions and having a body encirclement below said body portions.

4. The improvement of claim **3** and including loop means movably connecting said suspender strap means to the chest and scapula areas of said body portions.

5. The improvement of claim **4** and including loop means connecting said suspender strap means to said chest and scapula areas of said body portions for longitudinal motion therethrough.

6. An athletic shoulder protection assembly consisting of right and left protective bodies arched over the respective shoulders and extending down over the chest and scapula areas of the wearer, said protective bodies having adjacent margins in the chest and backbone areas of the wearer and neck margins following the shoulder arches, strap means fixed to each protective body adjacent the chest and scapula areas thereof and extending across the latter areas of the adjacent body and under the arms at the distant sides, guide means on said protective bodies to receive the strap means fixed to the adjacent body, said strap means fixed on one body portion acting on the other body portions for a base anchorage.

7. The assembly of claim **6** in which each of said right and left protective bodies have margins in normally adjacent relation with said assembly in the rest position, and said strap means have cross-overs in the vicinity of said adjacent margins, and said strap means extends from one protective body in a loop about the adjacent protective body, said guide means retaining said loops in position on the respective bodies.

8. The assembly of claim **7** in which the strap means includes stretch portions to allow said protective bodies to conform individually to changes in the anatomical configuration.

* * * * *