April 24, 1951 F. P. DELSALLE 2,550,044

SHOULDER PROTECTING DEVICE

Filed Jan. 5, 1948 2 Sheets-Sheet 1

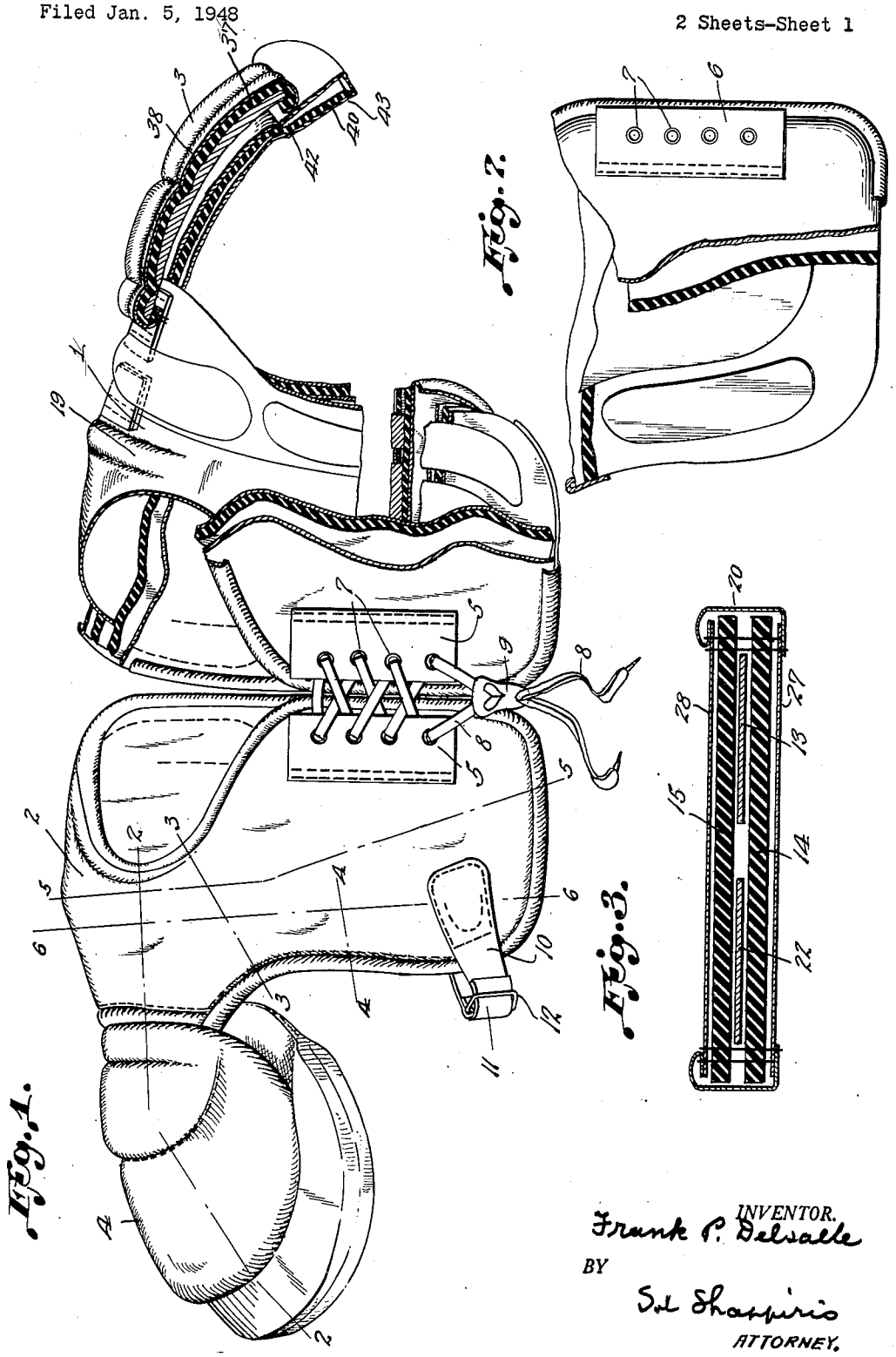


Fig. 1.

Fig. 2.

Fig. 3.

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Fig. 2.

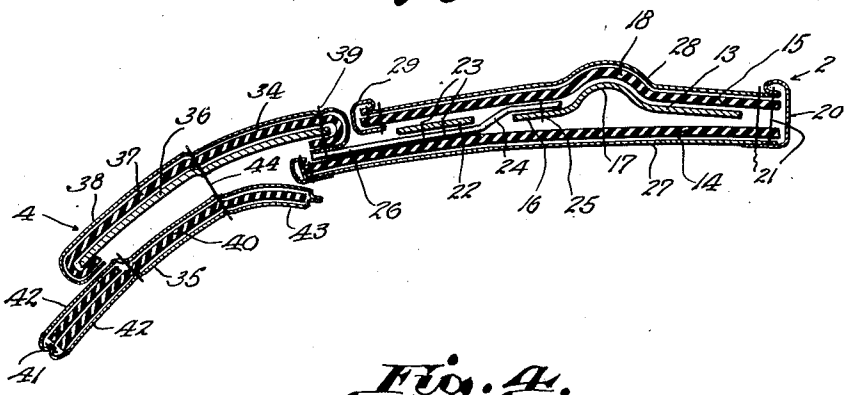
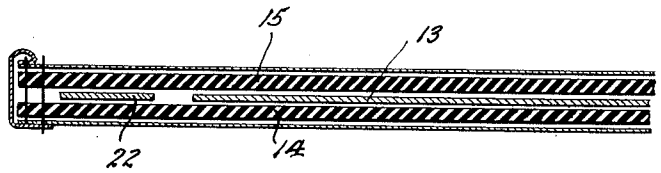


Fig. 4.



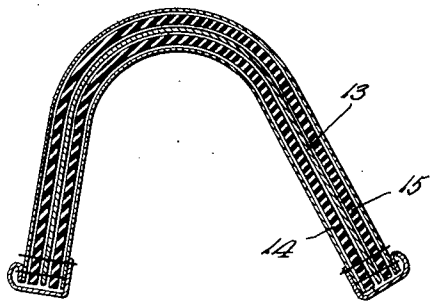
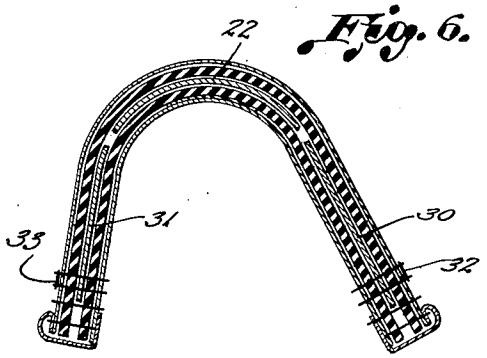


Fig. 5.

Fig. 6.



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SHOULDER PROTECTING DEVICE

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18 Claims. (Cl. 2—2)

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This invention relates to shoulder protecting devices suitable for various uses but particularly for football players, and includes shoulder pads for such use as well as jackets including such shoulder pads.

A variety of shoulder pads for use by football players have been utilized in the prior art. In many such devices, however, in order to secure protection for the player wearing such protective device, flexibility has been sacrificed. In addition while protection has been sought for the wearer of the protective device, little consideration has been given to protection of the opponent who may collide with the wearer of the protective device.

Among the objects of the present invention is the production of a protective device which gives needed protection without sacrifice of flexibility, and which exhibits marked flexibility for use by the wearer while exhibiting pronounced protection.

Still further objects include such protective devices which protect not only the wearer thereof, but minimize injury to another player coming into contact with the wearer of the protective device.

Still further objects include the production of protective devices of the character set forth above which are relatively economical to produce while exhibiting the properties and characteristics set forth.

Still further objects and advantages of the present invention will appear from the more detailed description set forth below, it being understood that such more detailed description is given by way of illustration and explanation only, and not by way of limitation, since various changes therein may be made by those skilled in the art without departing from the scope and spirit of the present invention.

In connection with that more detailed description, there is shown in the accompanying drawings, in

Figure 1, a front elevational view partly in section of a protective device embodying the features of the present invention; in

Figure 2, a section on line 2—2 of Figure 1; in

Figure 3, a section on line 3—3 of Figure 1; in

Figure 4, a section on line 4—4 of Figure 1; in

Figure 5, a section on line 5—5 of Figure 1; in

Figure 6, a section on line 6—6 of Figure 1; and in

Figure 7, a fragmentary detail partly in section of the rear view of the protective device of Figure 1.

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In accordance with the present invention, a protector device particularly for use by football players is provided to protect the player against injury, protection being afforded to the shoulders, the collar bones, the shoulder blades or clavicles, and desirably also providing chest and back protection, protection for the ribs, etc. In general the protecting device of the present invention may be said to comprise right and left shoulder arches and a shoulder cup attached to each of said arches. In general also, it may be said that each of the shoulder arches and each of the shoulder cups has, a generally similar series of laminations which desirably include a stiffening member or element of the contour desired for the particular arch or cup with a cushioning layer on each side of said stiffening element or member and coverings of cloth, leather, or other material for the outer faces or areas of the cushioning layers. The stiffening element or member is desirably produced of a stiff fiber but other suitable material may be used for such stiffening element or member such as suitable plastics. The cushioning layers may be desirably made of sponge rubber or similar sponge material utilizable in sheet form but other cushioning material may be employed such as padding either of cotton or wool, felt, hair, etc.; although sponge rubber is preferred in accordance with the present invention. The stiffening elements or members are desirably completely enclosed within the layers of cushioning material. The cushioning material is desirably protected by a cloth or other textile covering, by a leather covering, etc., or plastic material may also be used. Desirably those portions of the protecting device which are exposed outwardly carry a plastic or leather covering, while those portions of the cushioning layers which are adjacent to the body of the wearer carry a cloth covering. If desired the faces or areas of the cushioning members which are inwardly of the protecting device may also carry a covering such as of cloth.

The desired rigidity of structure is obtained at the same time that flexibility is provided, by having each shoulder cup attached to each shoulder arch by a flexible hinge construction and also desirably by providing the shoulder cups of a structure where an upper cap member is attached to the shoulder arches, while a lower cap member is carried by the upper cap member. In addition added protection for the shoulders, shoulder blades, collar bones, etc., of the wearer is obtained while insuring added flexibility for the shoulder arch construction by the utilization

of a floppet element in the shoulder arch which floppet while separate from the stiffening element or member of the shoulder arch gives the necessary added protection at the same time enabling flexibility to be obtained.

While the right and left shoulder arches each carrying a shoulder cup attached thereto, may constitute a unitary structure, more desirably as illustrated, each right and left shoulder arch with its accompanying shoulder cup constitutes one-half of a jacket-like structure, the two parts being flexibly connected as by lacing to constitute the protective device.

In the jacket form of structure as illustrated in the drawings, each shoulder arch and accompanying shoulder cup constitutes one-half of the jacket, the right and left portions constituting mirror images of each other. The right shoulder arch 1 with accompanying shoulder cup 3 with accompanying left shoulder arch 2 and attached shoulder cup 4 may be provided with lacing tabs 5, 5 at the front of the jacket, and corresponding lacing tabs 6 at the rear of the jacket, each of the tabs being provided with eyelets 7, 7 and lacing 8 provided with adjuster 9 for securing the lacing. The side openings of the jacket may be provided with a strap mount 10 carrying webbing 11 having the adjustable slide 12.

Referring now in detail to the structure of the shoulder arches and associated shoulder cups, and referring particularly to Figures 1 and 2 of the drawings, each shoulder arch comprises a stiff arch member 13 with a cushioning layer on each side of such arch member, namely, a lower cushioning layer 14 and an upper cushioning layer 15 so that the arch member 13 is completely enclosed within the cushioning layers 14 and 15. The arch member 13 is of a width to cover a substantial portion of the neck bones including the collar bone, etc.; and as shown in Figure 5, in cross-section, is in the shape of an inverted-U with the cushioning layers 14 and 15 conforming to the shape of the arch member 13 and completely covering it. The arch member 13 may be carried downwardly both in front and in the rear so that together with the covering cushioning layers 14 and 15, as shown in Figure 5, substantial protection is given to the chest and ribs by the front portion of the arch member and cushioning layers while substantial protection is given to the back by the rear portion of the arch member 13 with cushioning layers 14 and 15. In width, the cushioning layers 14 and 15 are substantially wider than the arch member 13 and extend outwardly beyond the end 16 of the arch member 13 with the lower layer 14 extending beyond the end of the upper cushioning layer 15 for purposes hereinafter set forth. The arch member 13 is given a fluting forming an inverted channel 17 between the ends of the arch member and the upper cushioning layer 15 is desirably provided with a corresponding recess 18 in which the fluting 17 is received. The fluting 17 in the stiff arch member 13 together with recess 18 in the upper cushioning layer 15, serves several purposes. The fluting and recess 18 tend to retain the stiffening arch member in position, serve also to strengthen and rigidify the stiffening member, and also offer additional protection to the wearer of the protective garment. The fluting 17 need extend only a portion of the distance in front and back of the arch member as shown at 19 in Figure 1. At the inner end of the cushioning layers 14 and 15, they may be bound together by means of a binding 20 which may be of cloth for example, thin leather, etc., with stitching 21 to secure the ends of the cushioning layers 14 and 15 with the binding 20; or any other means of joining these elements together may be employed.

A floppet 22 consisting of relatively stiff fiber or similar material is positioned between the cushioning layers 14 and 15 separately from the arch member 13, the floppet 22 lying wholly within the cushioning layers 14 and 15. The arch member 13 together with the floppet 22 gives the needed protection to cover the entire shoulder and neck portion, cooperating with the cushioning layers for this purpose; but by utilizing such floppet 22 separate from the arch member 13, substantial flexibility is given to the shoulder arch since the floppet 22 is free to move back and forth under impact as may be desired and a much more flexible structure is obtained in this way without sacrifice of protection to the wearer. The floppet 22, as shown in Figure 6, is arcuate in cross-section. It may be stitched or otherwise secured as shown at 23 to a hinge member 24. The hinge member or element 24 consists of flexible textile, fabric, cloth, or similar material, attached at one of its ends as shown at 25 to the outer end 16 of the arch member 13, the hinge member 24 passing from such point of attachment, between the cushioning layers 14 and 15, below the floppet 22 and outwardly from between the cushioning layers 14 and 15, extending at 26 beyond the outer end of the cushioning layer 15. The lower cushioning layer 14 may be provided with an outer cloth covering 27 or other material such as plastic may be employed, leather, etc., although cloth is preferred for this purpose. The outer surface of the upper cushioning layer 15 is also provided with a covering which desirably is of leather but may be of cloth, plastic or other material. The outer end of the upper cushioning layer 15 and associated leather covering 28 may desirably be provided with a binding 29 stitched or otherwise secured in position.

Since the arch member 13 as pointed out above is substantially U-shaped in cross-section and extends downwardly to protect the chest and back of the wearer but in width does not cover the width of the body, and since the floppet 22 is arcuate in cross-section and does not extend downwardly any great distance between the cushioning layers 14 and 15, additional protection for the ribs and back is desirable and this is provided by having a floating chest fiber or other stiff element 30 between the cushioning 14 and 15, separate from the floppet 22 and placed below the latter and out of contact with the lower portion of the arch member 13. Similarly a floating back fiber or stiffening element and protective 31 is provided in the back portion of the protective device between the cushioning layers 14 and 15, below the floppet 22, and separate from the arch member 13. In this way by utilizing floating back fibers and chest fibers, together with the floppet and shoulder arch, adequate protection is provided to the wearer but at the same time great flexibility in the protection device is obtained. The floating chest fiber 30 and the floating back fiber 31 is desirably anchored in position by being attached at their lower ends by stitching or in any other way as shown respectively at 32 and 33, Figure 6, to the cushioning layers 14 and 15.

Each shoulder cup desirably consists of an upper cap member 34 and a lower cap member 35 carried thereby, the upper cap member 34 being attached to the shoulder arch so that flexi-

bility is obtained. The upper cap member **34** may consist of a fiber or other stiffening element **36** slightly arcuate in cross-section and provided with a cushioning layer **37** which cushioning layer is desirably carried beyond the ends of the cap fiber **36** and turned about the ends of such cap fiber **36** in order to completely cover the edges of the cap fiber **36**. A leather covering **38** is desirably provided on the outer portion of the cushioning layer **37**. The outer covering **38** may also be turned inwardly to completely cover the cushioning layer **37**, and the inner ends of the leather covering **38**, cushioning layer **37**, and cap fiber **36** may be stitched together or otherwise flexibly attached as by stitching **39** to the outer end of the hinge element **24**, resting against the upper portion of the outer end of pointed out above beyond the upper cushioning layer **15** to provide for this arrangement.

The lower cap member **35** may consist of one or more layers of cushioning material **40**, two layers showing at the outer end **41**, these cushioning layers **40** and **41** in the lower cap member **35** being desirably provided with cloth or other coverings **42**, the inner end **43** of the lower cap member **35** engaging against the outer end of the cushioning layer **14**, such lower cap member being held in position by stitching **44** attaching the upper and lower cap members together intermediate their ends, leaving the outer ends of the upper cap member **34** and both the inner and outer ends of the lower cap member **35** free for movement giving added flexibility to the device while still insuring protection for the wearer.

By the structure as set forth above, ample protection is secured for the wearer and in fact such protection is amplified over prior art structures because the flexibility provided by the protection device insures adequate protection both for the wearer and for anyone colliding with him. Such flexibility is secured by a number of elements in this structure including principally the floppet construction and the hinged connection between the shoulder arches and the shoulder cups; while the shoulder cup structure itself also gives substantial play providing protection and necessary flexibility.

Having thus set forth my invention, I claim:

1. A shoulder protecting device comprising right and left shoulder arches and a shoulder cup attached to each of said arches, each shoulder arch comprising a stiff arch member of substantially less width than said shoulder arch, a cushioning layer on each side of said stiff arch member, said cushioning layers being of greater width than said stiff arch member and the lower cushioning layer extending beyond the upper cushioning layer, a hinge element attached at one of its ends to said stiff arch member and extending outwardly therefrom between said cushioning layers and beyond said upper cushioning layer, and a shoulder cup attached to the other end of the hinge member.

2. A shoulder protecting device as set forth in claim 1, in which a floppet of stiff material is attached to the hinge member within the cushioning layers between the stiff arch member and the shoulder cup the floppet being capable of protective movement within said cushioning layers.

3. A shoulder protecting device as set forth in claim 2, in which the shoulder cup comprises a stiff cap member and a cushioning layer on each side of the stiff cap member.

4. A shoulder protecting device as set forth in claim 1, in which the shoulder cup comprises a stiff cap member and a cushioning layer on each side of the stiff cap member.

5. A shoulder protecting device as set forth in claim 1, in which the shoulder cup comprises a stiff cap member and a cushioning layer on each side of the stiff cap member, the upper cushioning layer for the cap member being carried around the inner edge of the cap member and inwardly thereof to cover such inner edge, the cap member and upper cushioning layer being flexibly attached to the hinge member.

6. A shoulder protecting device as set forth in claim 1, in which the shoulder cup comprises a stiff cap member and a cushioning layer on each side of the stiff cap member, the cushioning layer on the under side of the stiff cap member being flexibly attached to the upper cushioning layer of the shoulder cup.

7. A shoulder protecting device as set forth in claim 1, in which the shoulder cup comprises a stiff cap member and a cushioning layer on each side of the stiff cap member, the upper cushioning layer for the cap member being carried around the inner edge of the cap member and inwardly thereof to cover such inner edge, the cap member and upper cushioning layer being flexibly attached to the hinge member, and the cushioning layer on the under side of the stiff cap member being flexibly attached to the upper cushioning layer of the shoulder cup.

8. A shoulder protecting device comprising right and left shoulder arches and a shoulder cup attached to each of said arches, each shoulder arch comprising a stiff arch member of substantially less width than said shoulder arch, a cushioning layer on each side of said stiff arch member, said cushioning layers being of greater width than said stiff arch member and the lower cushioning layer extending beyond the upper cushioning layer, a hinge element attached at one of its ends to said stiff arch member and extending outwardly therefrom between said cushioning layers, and beyond said upper cushioning layer, and a shoulder cup attached to the other end of the hinge member, a floppet of stiff material attached to the hinge member within the cushioning layers between the stiff arch member and the shoulder cup, the floppet being capable of protective movement within said cushioning layers and the shoulder cup comprises a stiff cap member and a cushioning layer on each side of the stiff cap member, the upper cushioning layer for the cap member being carried around the inner edge of the cap member and inwardly thereof to cover such inner edge, the cap member and upper cushioning layer being flexibly attached to the hinge member.

9. A shoulder protecting device comprising right and left shoulder arches and a shoulder cup attached to each of said arches, each shoulder arch comprising a stiff arch member of substantially less width than said shoulder arch, a cushioning layer on each side of said stiff arch member, said cushioning layers being of greater width than said stiff arch member and the lower cushioning layer extending beyond the upper cushioning layer, a hinge element attached at one of its ends to said stiff arch member and extending outwardly therefrom between said cushioning layers, and beyond said upper cushioning layer, and a shoulder cup attached to the other end of the hinge member, a floppet of stiff material attached to the hinge member within the cush-

ioning layers between the stiff arch member and the shoulder cup, the floppet being capable of protective movement within said cushioning layers and the shoulder cup comprises a stiff cap member, and a cushioning layer on each side of the stiff cap member, the cushioning layer on the under side of the stiff cap member being flexibly attached to the upper cushioning layer of the shoulder cup.

10. A shoulder protecting device comprising right and left shoulder arches and a shoulder cup attached to each of said arches, each shoulder arch comprising a stiff arch member of substantially less width than said shoulder arch, a cushioning layer on each side of said stiff arch member, said cushioning layers being of greater width than said stiff arch member and the lower cushioning layer extending beyond the upper cushioning layer, a hinge element attached at one of its ends to said stiff arch member and extending outwardly therefrom between said cushioning layers, and beyond said upper cushioning layer, and a shoulder cup attached to the other end of the hinge member, a floppet of stiff material attached to the hinge member within the cushioning layers between the stiff arch member and the shoulder cup, the floppet being capable of protective movement within said cushioning layers and the shoulder cup comprises a stiff cap member and a cushioning layer on each side of the stiff cap member, the upper cushioning layer for the cap member being carried around the inner edge of the cap member and inwardly thereof to cover such inner edge, the cap member and upper cushioning layer being flexibly attached to the hinge member, the cushioning layer on the under side of the stiff cap member being flexibly attached to the upper cushioning layer of the shoulder cup.

11. A shoulder protecting device as set forth in claim 10, in which the device is in the form of a jacket, the stiff arch member is substantially inverted U-shaped in transverse section, the ends of the arch member being carried downwardly to provide a chest protecting portion and a back protecting portion, the cushioning layers covering such chest and back protecting portions, and stiff floating members, separate from the arch, positioned between said cushioning layers.

12. In a shoulder protecting device, a shoulder arch comprising a stiff arch member of substantially less width than said shoulder arch, a cushioning layer on each side of said stiff arch member, said cushioning layers being of greater width than said stiff arch member and the lower cushioning layer extending beyond the upper cushioning layer, and a hinge element attached at one of its ends to said stiff arch member and extending outwardly therefrom between said cushioning layers and beyond said upper cushioning layer, and a shoulder cup attached to said hinge member.

13. In a shoulder protecting device as set forth in claim 12, a floppet of stiff material attached to the hinge member within the cushioning layers between the stiff arch member and the outer end of the shoulder arch the floppet being capable of protective movement within said cushioning layers.

14. In a shoulder protecting device, a pair of

cushioning layers, a stiff arch member between said layers, said arch member being of substantially less width than said cushioning layers, and a floppet separate from said arch member but also between said cushioning layers, said floppet being disposed in substantially parallel relationship with respect to said arch member, the floppet being capable of protective movement within said cushioning layers.

15. In a shoulder protecting device as set forth in claim 14, a hinge member within said cushioning layers to which the stiff arch member and floppet are both attached.

16. In a shoulder protecting device, a shoulder arch including upper and lower cushioning layers, the lower cushioning layer being of greater width than the upper cushioning layer and extending therebeyond, a shoulder cup attached thereto, the shoulder cup comprising a stiff cap member and superposed cushioning layer therefor, the cap member and cushioning layer being flexibly attached to the shoulder arch, and a lower cushioning layer positioned under said stiff cap member, said lower layer being flexibly connected intermediate its ends to the cap member and extending beyond the free edge thereof.

17. A shoulder protecting device as set forth in Claim 1 in which the cushioning layers are of sponge rubber, the cushioning layer adjacent the body of the wearer carrying a cloth covering, the outer cushioning layer carrying a leather covering.

18. A shoulder protecting device comprising right and left shoulder arches and a shoulder cup attached to each of said arches, each shoulder arch comprising a stiff arch member of substantially less width than said shoulder arch, a cushioning layer on each side of said stiff arch member, said cushioning layers being of greater width than said stiff arch member and being secured to each other along three edges thereof, the lower cushioning layer having a free edge extending beyond the opposed free edge of the upper cushioning layer, a hinge element attached at one of its ends to said stiff arch member and extending outwardly therefrom between said cushioning layers and beyond said upper cushioning layer, a shoulder cup flexibly attached to the other end of said hinge element, said shoulder cup comprising a stiff cap member and superposed cushioning layer therefor, and a lower cushioning member positioned under said stiff cap member, said lower cushioning member being flexibly connected intermediate its ends to the cap member and extending beyond the free edge thereof.

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