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[54] PROTECTIVE COLLAR DEVICES

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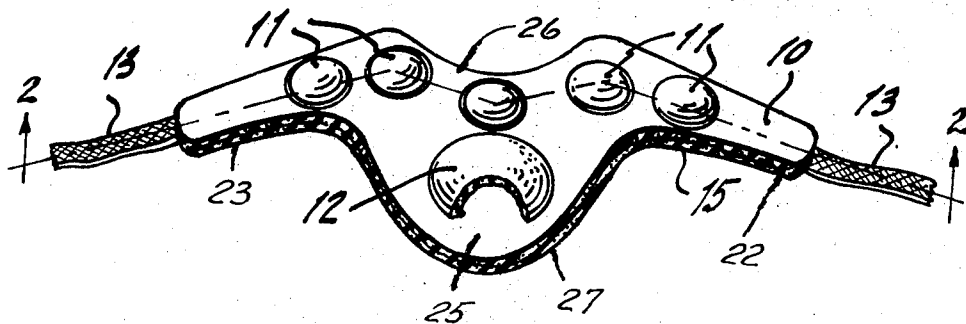
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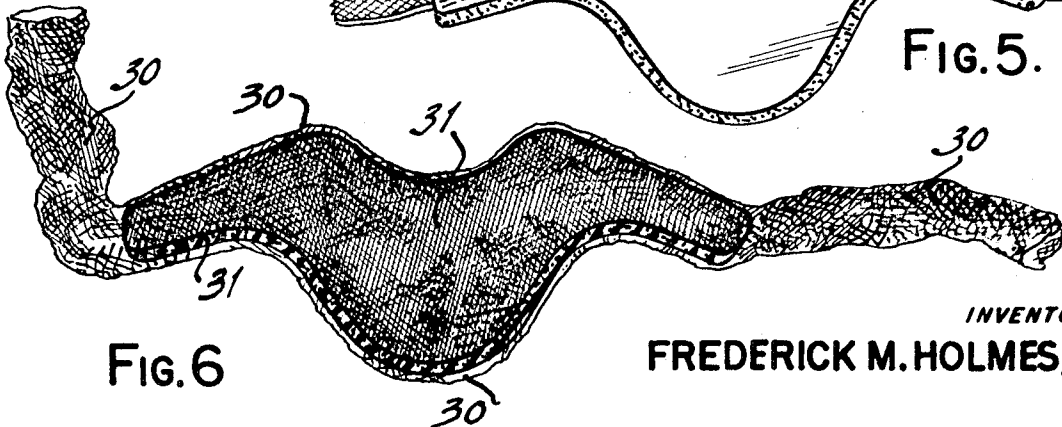
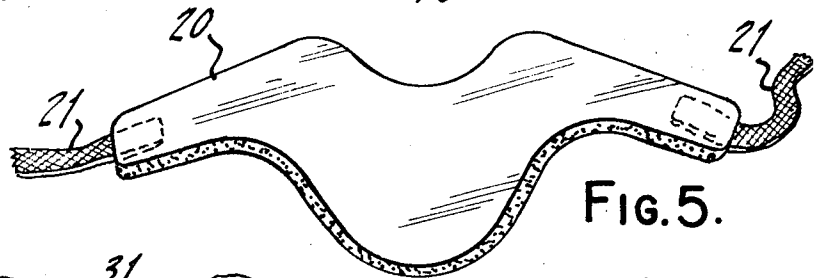
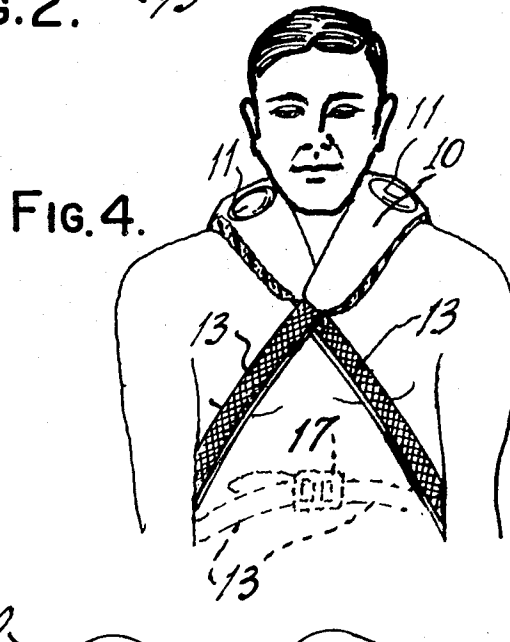
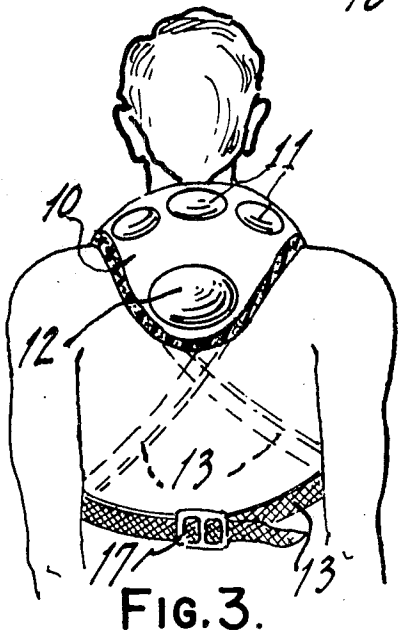
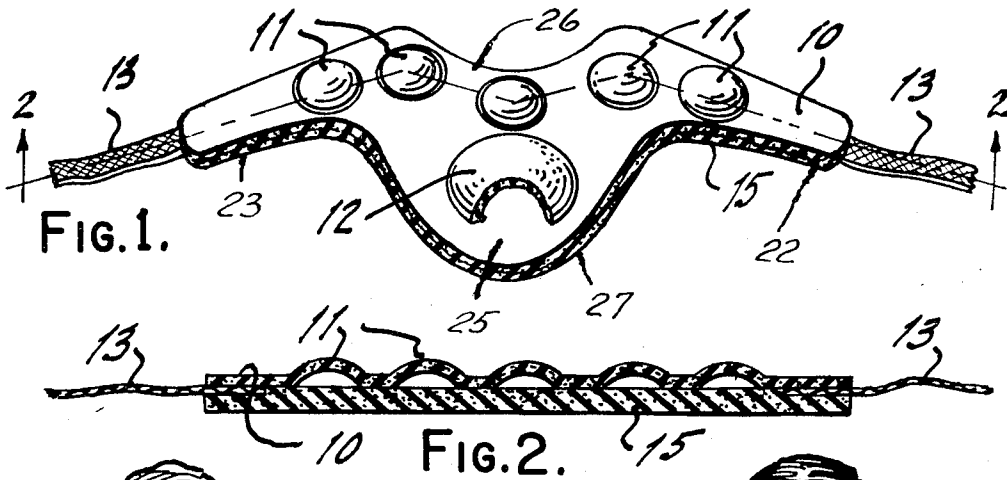
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[57] ABSTRACT

A protective collar device employs an elastomeric member having a general triangular configuration. The member has straps coupled at the right and left sides thereof and each of a sufficient length to encircle the torso of a person and to be secured at his back. The member as positioned serves to protect the posterior neck brachial plexus and spinal column region of the person, and is held securely in that position by means of the straps.

5 Claims, 6 Drawing Figures





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PROTECTIVE COLLAR DEVICES

This invention relates to protective devices for persons, and more particularly to a collar device for protecting the posterior neck brachial plexus and spinal column region of an athlete.

It is known that the posterior neck area of a person, and areas contiguous therewith are very sensitive to external forces. The sensitivity arises because of the concentration of nerve paths such as the brachial plexus and the positioning of the vertebrae at such locations.

In a competitive contact sport, such as football, external forces directed at these areas can cause injury to the person resulting in great pain and capable of incapacitating the participant.

The prior art has indicated a need for special devices exclusive of shoulder-pads, for protecting this area. An example of a prior art device is shown in U. S. Pat. No. 3,189,917 entitled "Protective Device," issued on June 22, 1965 to D. F. Sims. Prior art devices have many disadvantages. For example, they require laces or other means to fasten the device about the participant's neck. These arrangements require each collar to be individually tailored to suit the dimensions and needs of the particular participant. Furthermore, such laces enable the device to move and in essence, because of the lacing arrangements, may cause injury to the anterior neck area of the athlete as, for example, injury to his larynx. Furthermore, many such devices are covered with a leather or hard plastic substance which in itself can cause injury to the player by contacting with various areas of his head and so on.

It is therefore an object of the invention to provide an improved collar for protecting the posterior neck brachial plexus and spinal column region of an athlete from external forces directed thereat.

In accordance with a preferred embodiment of the present invention a collar apparatus is provided by a member fabricated from an elastomeric material, preferably a spongy rubber type material. The top surface of the material has a top side of a predetermined length sufficient to encircle the neck of said person and has the right and left sides of smaller length than said predetermined length. The top surface of the member may also contain cusps or hemispherical projections which serve as air pockets for cushioning blows directed thereat. The member also has a bottom side which is contiguous with said right and left sides and which follows a given curvilinear path therebetween, wherein the distance on the surface of said member between said top and bottom sides increases relatively symmetrically from said right and left sides towards the centerline of said surface. Coupled to the right and left sides of said elastomeric member are strapping means of sufficient length to pass across the chest of said person and about his torso to be secured at his back for maintaining the collar about his neck with the centerline of said top surface being relatively parallel to his spinal column.

If reference is made to the foregoing specification, a more complete understanding of the invention will be had when read in conjunction with the accompanying drawings in which:

FIG. 1 is a top view showing a protective neck collar device according to this invention;

FIG. 2 is a cross-sectional view taken through Section 2—2 of FIG. 1;

FIG. 3 is a perspective back view of a player wearing the protective collar;

FIG. 4 is a perspective front view of a player wearing the collar;

FIG. 5 is a top view of an alternate form of the collar shown in FIG. 1; and

FIG. 6 is a perspective view of a collar utilizing a gauze-like strapping arrangement.

Referring to FIG. 1 there is shown a top view of a protective collar apparatus according to this invention.

The member 10 is fabricated from a spongy rubber material such as a polystyrene or polyurethane foam, which as processed is relatively hard but retains resiliency. Such techniques for preforming such materials as well as obtaining

various consistencies are well known in the art and not considered part of the invention. The member 10 is of a general triangular configuration.

The top surface of the member 10, as preformed has cusps or projections 11 and 12 thereon which projections are symmetrically disposed about the center axis of the member 10 for affording additive protection to the posterior neck brachial plexus and spinal column region of the athlete using the collar. Coupled to the right and left sides of the member 10 are straps 13. The straps 13 may be secured to the member 10, as will be further explained, during the forming process or during the vulcanizing of the material. In any event, such straps 13 may be fastened to the member 10 by any other conventional securing means. The right and left sections 22 and 23 of the member 10 are contiguous with the central portion 25 of the member 10 which portion contains the cusps or projections 11 and 12. The central portion has a convex portion 26 and a concave portion 27.

FIG. 2 shows a cross-sectional view of the member 10 of FIG. 1.

As can be seen from the FIGURE, the member 10 is a composite member, comprising a bottom member 15, congruent with the top member 10. Member 15 is also fabricated from an elastomeric material and has the identical or similar shape of the top member 10. The top member is preformed with ridges or cusp-like projections. The members are secured together by means of a suitable glue or epoxy or can be so secured by a rubber processing technique. The area between the bottom surface of the cusps and the top surface of member 15 contain no material and hence form air pockets. These air filled pockets are formed by the cusps 11, 12 and are positioned on the top surface to cushion and protect the sensitive area about the posterior neck brachial plexus and spinal column region of the person utilizing the device. Hence, the air filled pockets serve as impact absorbers, thereby protecting the athlete. The straps 13 are wedged in between the two members and are thus secured during the forming process and held in place by the binding technique. The straps 13 are of sufficient length to encircle the torso of the person and to tie or buckle at his back. The thickness of the elastomeric collar is approximately between $\frac{1}{2}$ to $1\frac{1}{2}$ inches.

FIG. 3 shows a person wearing such a collar. As can be seen, the centerline of the member 10 is approximately held parallel to the spinal column of the person by means of the straps 13 which are routed across the chest of the person, one from right to left and the other from left to right and then about his torso to be secured at his back by means of a buckle 17 or other suitable securing device. The straps 13 therefore enable the collar to be firmly positioned as desired, thus preventing movement of the collar. The elasticity of the sponge-like rubber material causes the collar, as dimensioned and shown, to completely conform to the contours of the person's body. Size of the individual is relatively unimportant, because of the elastic nature of the material and of the strap devices for securing the collar.

FIG. 4 shows a front view of the person wearing the collar. It is seen from the FIGURE that the right and left sides of the collar are positioned on an angle running approximately perpendicular to the player's collarbones to thereby form a V-like configuration. The front neck area including that area containing the trachea and the larynx are exposed. Thus the collar cannot interfere with the player's breathing apparatus, nor can it be tightened as to choke the player or otherwise interfere with the sensitive organs contained therein.

The top and bottom surfaces of the collar and the straps can be coated with an extremely thin layer of plastic or a water proofing compound to prevent sweat or moisture from being absorbed therein.

The collar will conform to the shape of the player's body parts in the covered areas and will not interfere with any additional equipment he may wear, such as shoulder-pads and so on.

FIG. 5 shows a collar member fabricated from a single piece of an elastomeric material and having the same general configuration as shown in FIG. 1. Air pockets or cusps may be preformed on the top surface without adding a bottom surface according to FIG. 2. Therefore, the air filled hollows or air pockets exist between the surface of the player's skin or apparel and the bottom surface of member 20. The straps 21 are of a sufficient length suitable for being routed as shown in FIGS. 3 and 4 and can be performed or presecured into the material as previously described.

FIG. 6 shows an alternate embodiment of a collar device incorporating a gauze-like elastic sleeve member 30 for containing the collar member 31 and forming straps to be tied about the torso as previously explained in conjunction with FIGS. 3 and 4.

The sleeve 30 is fabricated from a gauze-like elastic material and is opened on both ends. The sleeve 30 can therefore stretch. The member 31 is placed within the sleeve at the center thereof and is secured within the sleeve by the elastic action of the sleeve 30, which because of the same serves to conform to the shape of the collar member 31.

The ends of the sleeve 30 not enclosing the member 31 are then used as the straps 13, to be secured about the torso of the participant, thus holding the collar in the same position as shown in FIGS. 3 and 4 and serving to afford the same advantages.

It will be understood that modifications and variations may be effected without departing from the spirit and scope of the novel concepts of this invention, as hereby claimed.

I claim:

1. A collar apparatus for protecting the posterior neck brachial plexus and spinal column region of a user from injury due to forces directed at said area, comprising,

- a. a member fabricated from an elastomeric material, said member having a central section, top and bottom sides and left and right side sections contiguous with said central section and gradually extending downwardly and outwardly from the top side of the central section, said top side being relatively concave, said bottom side being relatively convex, said central section having an area to cover the posterior neck brachial plexus and spinal column region of a user, whereby when said member is being worn, the member conforms to the user's body to cause said concave top side to surround the back and side area of the user, with said left and right side sections extending over the user's shoulders and forming a V-like configuration beneath the front neck area of the user and said central section covering the posterior neck brachial plexus and spinal region of a user,

- b. a plurality of hemispherical elastomeric projections extending upwardly from said central section and positioned to further protect the posterior neck brachial plexus and spinal column when said collar is being worn, and

- c. first and second strapping means coupled to said right and left side sections, each of a sufficient length to pass across the chest and torso of a user and to be secured at the user's back for maintaining said collar about the user's neck with said center section positioned so that at least one of said elastomeric projections is over the user's spinal column when said collar is being worn.

2. The collar apparatus according to claim 1 wherein said elastomeric material comprises a spongy rubber.

3. The collar apparatus according to claim 2 wherein said thickness of said elastomeric is less than one inch.

4. A collar apparatus for protecting the posterior neck brachial plexus and spinal column region of a user engaging in athletic activity, from injuries due to forces directed at said region comprising,

- a. a first member fabricated from an elastomeric material, said member having a central section, top and bottom sides and left and right side sections contiguous with said central section and gradually extending downwardly and outwardly from the top side of said central section, said top side being relatively concave and said bottom side being relatively convex,

- b. a second member relatively congruent with said first member and also fabricated from an elastomeric material, said second member having a top surface including a plurality of projections extending upwardly therefrom and preformed in said material,

- c. means for fastening said first and second members to one another with said bottom surface of said second member secured in congruency with said top surface of said first member, with said protrusions extending upwardly from the surface of said fastened members, said protrusions forming air filled hollows between said fastened surfaces for cushioning the impact of forces directed thereat, and

- d. means coupled to said fastened members for securing the same about the body of a user to firmly hold said member about the neck area in a position such that said concave top side surrounds the back and side neck areas of a user, with said side sections extending over the user's shoulders and forming a V-like configuration beneath the front neck area, said central section between said top and bottom sides being positioned to protect the posterior neck brachial plexus and spinal column region of a user when said collar apparatus is being worn.

5. The collar apparatus according to claim 4 wherein said means coupled to said fastened member comprises,

- a. a cylindrical sleeve-like member opened at both ends and fabricated from an elastic gauze-like material and of a more than sufficient length for encircling the torso of a user and to encompass said collar apparatus, wherein the material of said sleeve not encompassing said collar apparatus is used to strap the same about the torso of a user.

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