July 1, 1941. J. A. MULVEY 2,247,961

ATHLETIC APPAREL

Filed Feb. 15, 1939 2 Sheets-Sheet 1

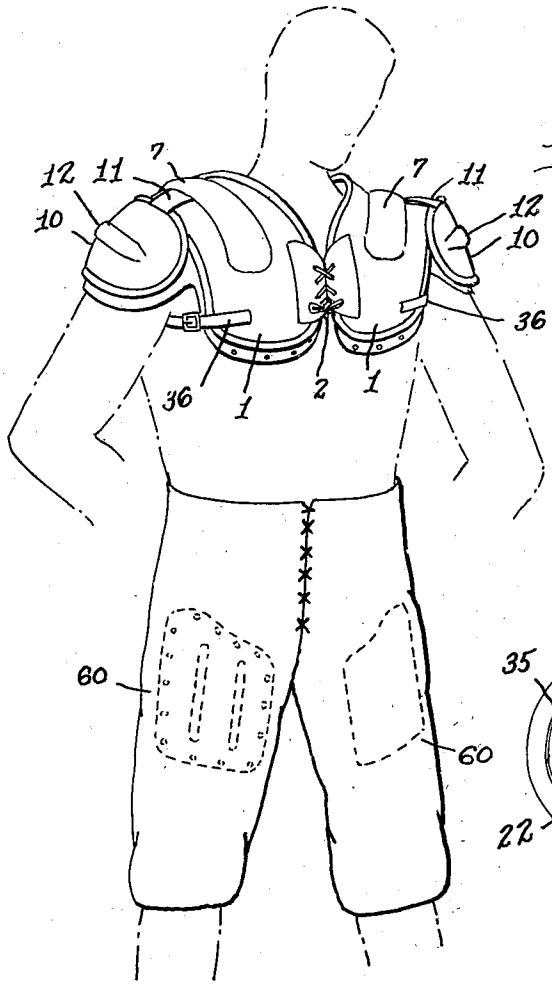


Fig. 1.

Fig. 2.

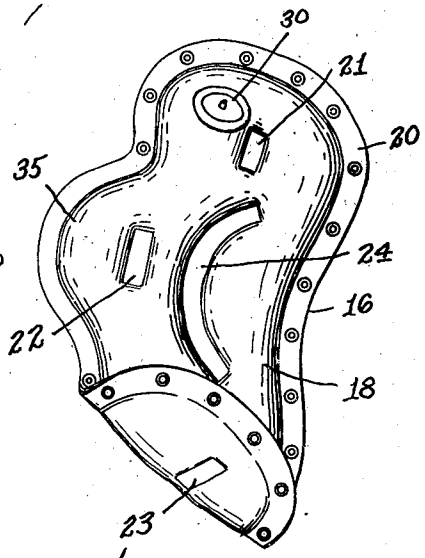
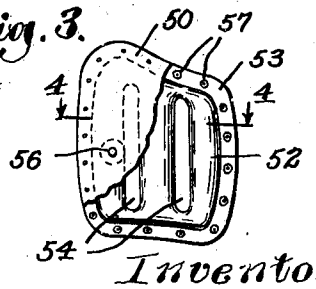


Fig. 3.



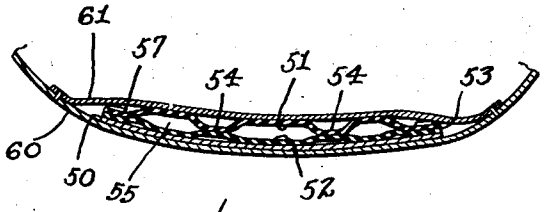


Fig. 4.

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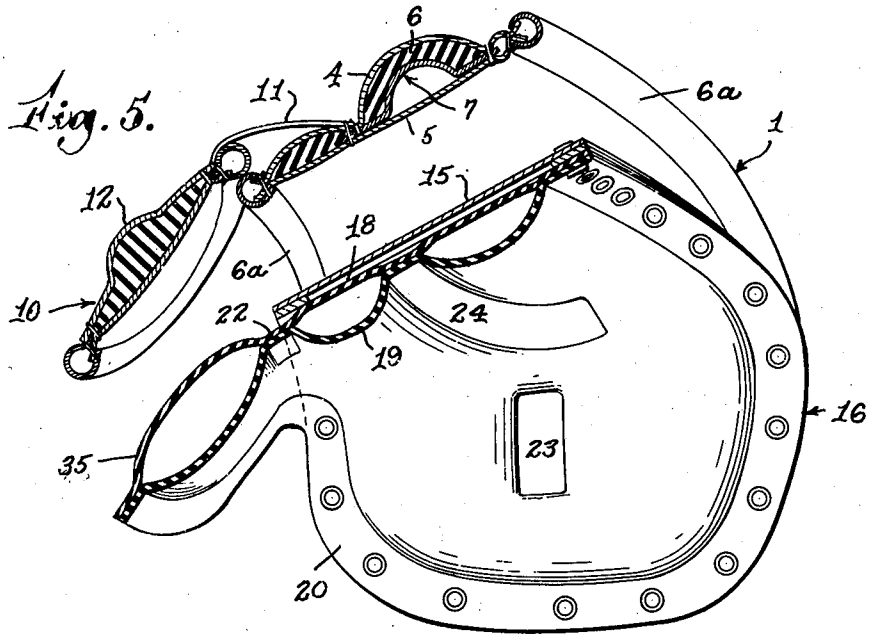
Attorneys

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ATHLETIC APPAREL

Filed Feb. 15, 1939 2 Sheets-Sheet 2

Fig. 5.



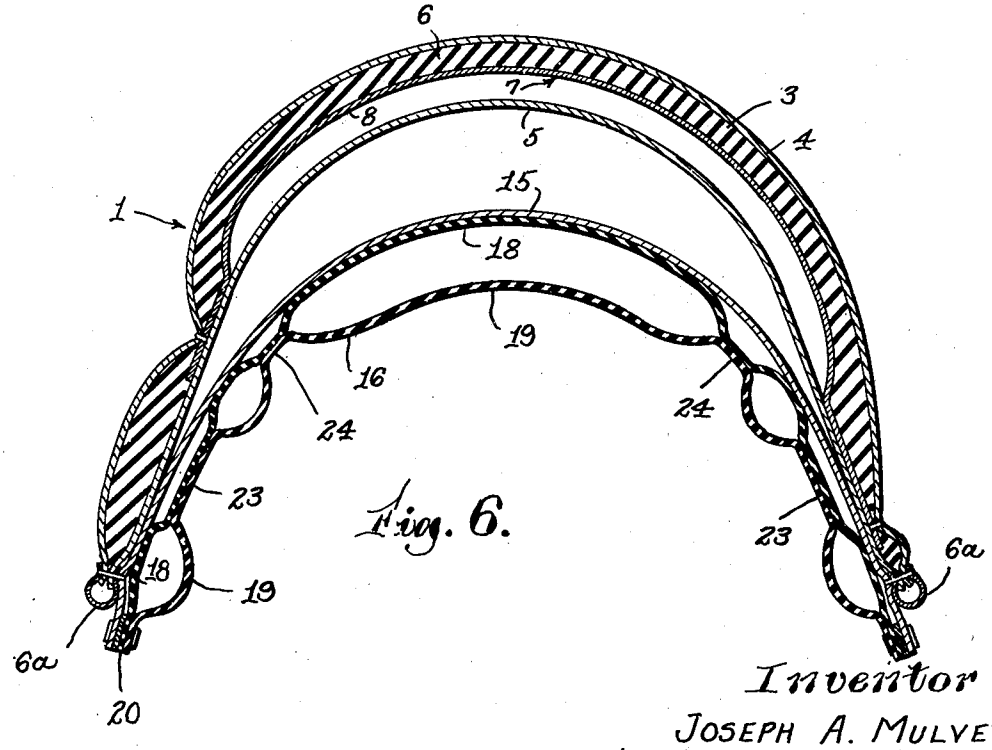


Fig. 6.

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UNITED STATES PATENT OFFICE

2,247,961

ATHLETIC APPAREL

Joseph A. Mulvey, Andover, Mass.

Application February 15, 1939, Serial No. 256,480

1 Claim. (Cl. 2—2)

This invention relates to athletic apparel designed more particularly for use in connection with the more violent sports where protection to the player from injury is an important function of the apparel, and for the purpose of this invention it will be more particularly designed in connection with football suits, though it should be understood that desirable features might be used in connection with apparel for other sports or purposes.

One of the objects of the present invention is to provide maximum protection to the wearer without the use of elements which may be dangerous to an opponent. For example, many football suits are now provided with heavy, hard, fiberboard parts exposed on the outer face of the suit where such parts may inflict painful and perhaps dangerous injuries to an opponent who is struck thereby.

In accordance with this invention, therefore, pneumatic cushioning elements are employed in such a manner that exposed hard surfaced materials are not necessary to afford adequate protection to the wearer.

A further object is to provide a construction for such elements such that they may be manufactured cheaply and of such shape variations as to make them suitable for use in various portions of the garment or for protection of portions of the wearer independent of the garment where protection is desirable.

A further object is to provide for quickly replacing any of such pneumatic cushions which may receive damage.

Still another object is to provide pneumatic cushion elements with parts arranged to protect such elements from injury and also to distribute pressure thereon, thus to avoid such localized stresses as might injure the cushioning elements or produce undesired localized pressure on the body of the wearer.

Further objects and advantages will appear from a more complete description of certain embodiments of the invention shown in the accompanying drawings in which

Figure 1 is a perspective view showing football shoulder pads and pants embodying the invention and as applied to the body of the user.

Figures 2 and 3 are elevations of pad elements, the lower portion being shown as turned up in Figure 3, and showing elements adapted for use in the shoulder pads and pants, respectively, illustrated in Figure 1.

Figure 4 is a section to a larger scale on line 4—4 of Figure 3.

Figure 5 is a perspective view of a portion of the left shoulder pad cut through laterally at the top.

Figure 6 is a transverse section through the shoulder pad.

Referring to the drawings, at 1 is shown a pair of shoulder protectors which may be secured together at front and back, the fronts being shown as secured together by the lacing 2. Each of these shoulder pads, as shown best in Figures 1, 5 and 6 comprises a concavo-convex saddle cushioning portion 3 which may comprise outer and inner layers 4 and 5 of leather, canvas, or other suitable material capable of withstanding the wear and service. These layers may enclose between them cushioning material 6 such as sponge rubber, felt, or the like, and their edges may be provided with a finishing binding 6a. If desired and as shown, this saddle member may have a corrugation 7 arranged substantially centrally between its side edges and passing over the shoulder and down for the desired distance over the breast and back of the wearer. This corrugation may be produced by the use of a corrugated arch-shaped reinforce of metal, hard fiber, or the like, as shown at 8, but this should be covered sufficiently by cushioning material so that it will not be exposed to cause injury to an opponent. The lower ends of the saddle member may extend to the desired distance downwardly over the chest, and at the back preferably over the shoulder blade of the wearer. There may also be provided a wing member 10 which may be secured as by a strap 11 to the saddle portion in position to extend over the upper portion of the wearer's arm at the shoulder. Such wings may be formed of cushioning material and reinforced as by a corrugation 12, if desired.

Secured to the lower ends of the saddle portion are opposite ends of a web strap suspension member 15, and inwardly of this member 15 is placed a pneumatic cushion 16 which rests upon the wearer's shoulder. This pneumatic cushion and the web strap suspension support the central portion of the saddle member elevated above the wearer's shoulder so that impacts on the saddle member are exerted against the wearer over the area of the web strap suspension and avoid production of localized pressures from the contour of the saddle portion which is thus not required to closely fit the wearer.

The pneumatic cushion element, as shown best in Figure 3 and in Figures 5 and 6, comprises a pair of layers 18 and 19 of impervious flexible material such as a rubberized fabric which are

secured together around their margins as at 20. They are also caused to adhere over areas such as 21, 22, 23 and 24 inwardly of these margins. These areas of adhesion are in general elongated and of such size and position as to tie the members 18 and 19 together and cause them to assume, when the unattached areas are separated by air introduced between them, a generally flat pad-like formation of the desired shape and thickness. The sizes and arrangements of the adhered areas are arranged in accordance with the particular shape and size of the cushion desired, wherever it may be used. This provides a cheap method of controlling the contour and shape of the cushion over its various parts. These areas of adhesion define between them and the margin of the cushion, intercommunicating chambers for the reception of the air, and the air may be introduced into these chambers by a suitable automatic air valve which may be located in any convenient position. Such an air valve is shown in Figure 2 at 30.

The suspension strap 15 likewise controls the surface contour of the pneumatic cushioning element over its entire extent and serves to distribute stresses thereover, thus protecting the pneumatic cushion from localized heavy pressures which might tend to damage it. The cushion member 16 is preferably retained in position by separable fastenings, these separable fastenings being located around the margin 20 of the pneumatic cushion, and the corresponding parts of the suspension strap. Thus should damage occur to any of these cushions, the damaged cushion may be readily removed and replaced without substantial loss of time, so that the proper functioning of the protector may be insured during the progress of a game or sport.

If desired, the cushion element 16 may be provided with an integral extension as shown at 35 forming an air chamber in communication with the air chambers of the main portion 7 of the cushion element, and which may extend down over the upper portion of the arm of the wearer and beneath the wing 10, thus to interpose a pneumatic cushion between this wing and the arm of the wearer. This portion may or may not be secured at its margin to the wing, it being shown herein as unsecured in order to allow a greater freedom of motion between the wing and the other portions of the protector. The protector may be held to the body of the wearer, as is usual, by straps 36 which pass around beneath the arms of the wearer and connect the front and back portions of the protector.

In Figure 1 and also in Figures 3 and 4 is shown a construction particularly suitable for use as a thigh protector. Such a protector may be formed of a base member 50 preferably of a relatively stiff strong material such as fiberboard of the desired shape and which may be molded to the desired concavo-convex contour to engage the area of the thigh to be protected. As shown this member is of generally rectangular outline, although the top edge on the outer portion of the thigh may be extended somewhat further upwardly than the inner side, and the edges may be rounded somewhat as desired. To one face of this member 50 may be secured the pneumatic cushioning element which is shown in Figures 3 and 4 as formed of two layers 51 and 52 of impervious material such as rubberized cloth, which are secured together around their margins as at 53 and which may also have areas of adhesion as at 54 which are elongated and define between them and the margins, intercommunicating air chambers 55. An automatic air valve 56 may be employed to permit the introduction of air into these air chambers and to prevent its escape therefrom in the manner of the automatic air valve 30 shown in Figure 2. The pneumatic cushion may be secured as by separable fastenings 57 at its margin to the margin of the base plate 50 which thus protect the pneumatic cushion from injury and also act to distribute pressure over the entire area of the pneumatic pad. The pneumatic pad portion may be worn next to the wearer and the protector may be secured in any suitable manner. In Figure 4 it is shown as inserted in a pocket between the outer face member 60 of the garment and a pocket flap 61 secured thereto on the inside face of the garment. Of course the garment may be provided with rubber or felt pads over any desired areas and to any desired extent. Other methods of securing the pad comprising the base member 50 and the pneumatic cushion in position over the desired areas of the wearer's body may, of course, be employed as desired.

From the foregoing description of certain embodiments of this invention, it should be evident to those skilled in the art that various other changes and modifications might be made without departing from the spirit or scope of this invention as defined by the appended claim.

I claim:

A shoulder pad having a saddle portion for positioning over the shoulder and downwardly over the chest and shoulder blade, a flexible strap secured to the front and back margins of said saddle portion and spaced from the top thereof, a wing member having a strap connection to said saddle portion and adapted to engage over the outer portion of the arm at the shoulder of the wearer, and an inflatable pneumatic pad positioned on the inner face of said strap for engagement with the wearer, said pneumatic pad having an extension overlying the outer portion of the arm beneath said wing, and cooperating marginal separable fasteners connecting said pad and strap.

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