Feb. 23, 1937. F. W. GLAHE 2,071,827

PROTECTIVE ARMOR FOR FOOTBALL PLAYERS AND THE LIKE

Filed Sept. 29, 1936

Fig. 1.

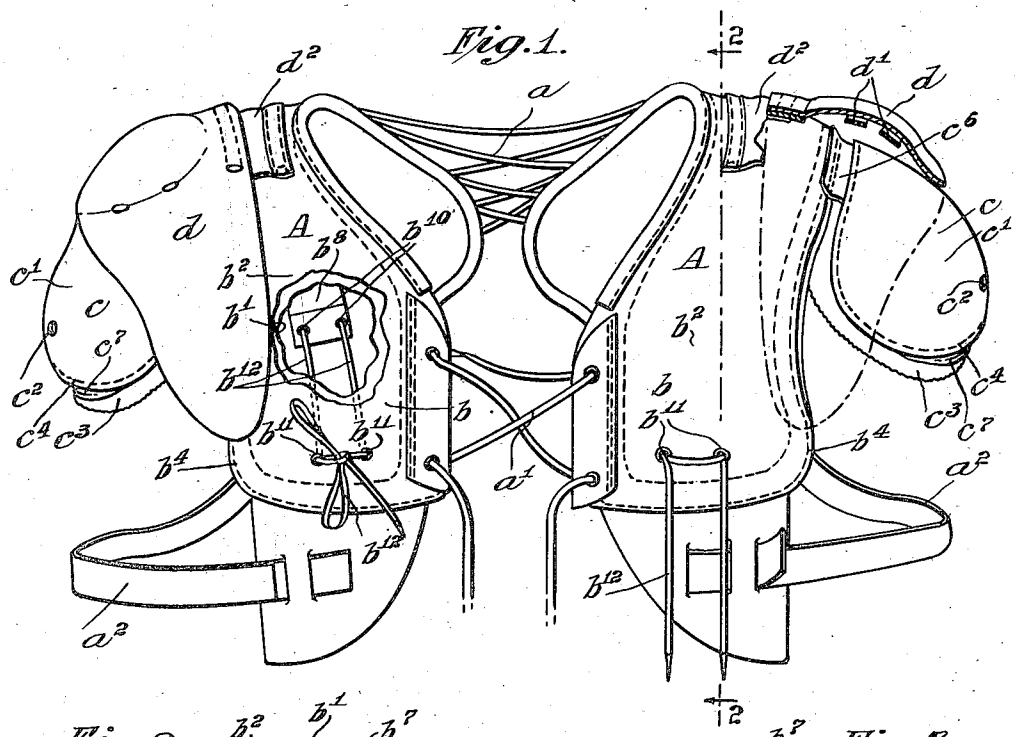


Fig. 2.

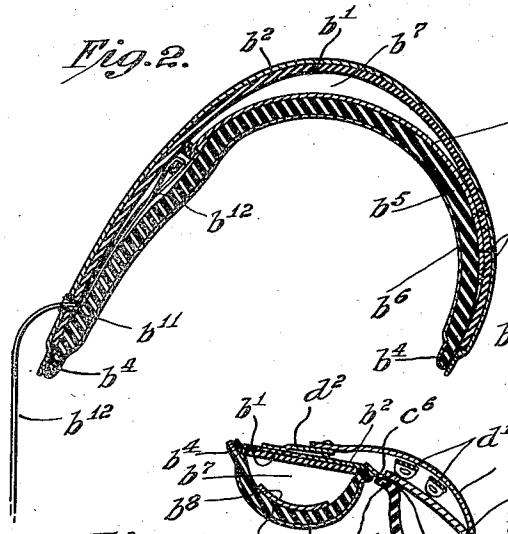


Fig. 3.

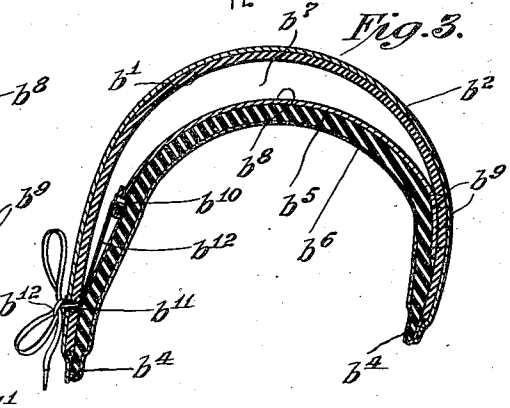
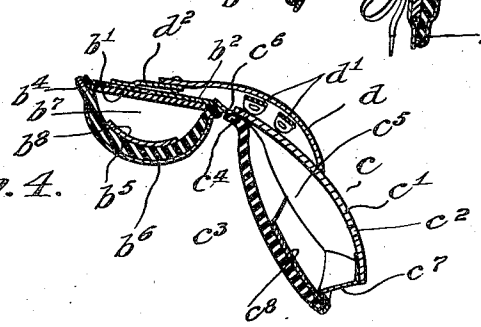


Fig. 4.



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PROTECTIVE ARMOR FOR FOOTBALL PLAYERS AND THE LIKE

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2 Claims. (Cl. 2—2)

The present invention has been developed in connection with what are known as shoulder pads, but as the explanation of the invention proceeds it will be obvious that it may be applied to protective covering for other parts of the body and for others than football players. In accordance with the invention there is provided between the usual outer, semi-rigid shell, which is conformed somewhat to the portion of the body to be protected, and an inner relatively soft layer, an air cushion whereby the shock of a blow on the outer shell is distributed and liability to injury of the protected portion is greatly reduced. Both the outer shell and the inner layer are themselves substantially impermeable to the passage of air therethrough and while the outer shell is semi-rigid and only semi-flexible, the inner portion or layer is not only soft and yielding but is itself elastic, or is combined with an elastic member, so that the volume of the chamber is reduced by the impact of a blow on the shell, the air being forced out through the interstices of the stitches by which the inner portion is secured to the shell or through ports provided for the purpose and so that when the external pressure on the shell is relieved the tension of the inner portion or layer will pull it away from the shell and so draw in air and restore the air cushion to full efficiency.

In the accompanying drawing in which is illustrated a convenient and practical embodiment of the invention,

Figure 1 is a view in elevation of what is commonly called a shoulder pad, parts being broken out to show details of construction.

Figure 2 is a detail view in section on the plane indicated by the broken line 2—2 of Figure 1, the inner layer being shown as lying snugly against the inner surface of the outer shell.

Figure 3 is a view similar to Figure 1, but showing the inner layer drawn away from the outer shell, so as to form the air chamber, by an elastic webbing, which in Figure 2 is shown as relaxed.

Figure 4 is a detail view in section, on a plane at right angles to the plane of section of Figures 2 and 3 drawn through the shoulder cap.

The complete armor comprises two main parts A—A, one for each side of the body, adjustably secured together at the back by a lacing a and at the front by a lacing a^1 and provided as to each main part with an elastic belt strap a^2. These two main parts are identical, except that one is made for the right side of the body and the other for the left side of the body, and a description of one part will suffice for both, the same reference characters being used to identify like portions of the two main parts. In the construction shown each main part consists of a body portion b, a shoulder cap c hinged to the body portion, and a shoulder cover d also hinged to the main body portion b. Both the body portion b and the shoulder cap c are so constructed as to provide an air cushion. In the body portion an elastic webbing is provided to effectuate the separation of the inner layer from the outer shell. In the case of the shoulder cap the elasticity of the inner layer itself is largely depended upon to effectuate the formation of the air chamber, but because the air space is not so large as to make it completely effective a piece of elastic webbing is provided to aid in effectuating the formation of the air chamber. Each body portion b comprises a substantially impermeable outer shell b^1, suitably shaped to conform generally to the shoulder of the wearer and made of some suitably semi-rigid or semi-flexible material such as vulcanized fiber. This may have an outer cover b^2 of leather. Within the shell b^1 and preferably stitched thereto along its edges, as indicated at b^4, is a substantially impermeable padding layer b^5 of relatively soft and flexible material, such as soft rubber, which may have a protective lining b^6 of suitable fabric also stitched to the shell b^1. This relatively soft padding layer b^5 is secured to the shell b^1 under some degree of tension, so that there is formed between the shell and itself, for a portion of its length, an air space or air cushion, as at b^7, but the air space formed under the tension of the soft rubber padding layer alone would be formed mainly where the curvature of the shell is on the shortest radius, as over the top of the shoulder. To provide for greater extension of the air cushion, both front and back of the shoulder of the wearer, there is placed between the shell and the soft rubber padding layer an elastic webbing b^8 which at one end is secured to the shell, as at b^9, while its other end is free, and means are provided for placing the elastic webbing under tension so that, as illustrated in Figure 3, it will pull the soft rubber padding layer away from the shell, leaving an air space b^7 of much greater extent, as shown in Figure 3. As a convenient means for placing the elastic webbing under tension longitudinally, the free end is provided with eyelets, as at b^{10}, through which and through eyelets b^{11} formed in the shell b^1 is threaded a lacing b^{12} which may be drawn up and tied so as to maintain the webbing b^8 in tension and draw the padding layer b^5 away from the shell b^1.

Not only is an extended air space b^7 formed by this means but the protective armor may thus be adjusted to suit the shoulder of the wearer. While a separate elastic webbing may be provided in the body portion b to supplement the elasticity of the padding layer b^5 it is possible to rely in part upon the elasticity of the padding layer b^5 to effectuate the formation of the air chamber or air cushion by placing the padding layer itself under some degree of tension. Such embodiment of the invention is illustrated in the case of the shoulder cap c, as shown in Figures 1 and 4 in which the semi-rigid shell c^1, represented in this case as formed of sole leather, and provided with air ports c^2, to permit the ingress and egress of air, has the soft rubber padding layer c^3 with an interposed flap c^7 of soft leather to promote the bellows action stitched all around to the shell c^1, as at c^4, under such tension that, by reason of the curvature of the shell c^1, it stands away from the shell c^1, forming the desired air chamber cushion c^5. To supplement the elasticity of the soft rubber padding layer there may be also stitched in between the shell c^1 and the soft rubber padding layer c^3 a strong piece of elastic webbing c^8.

The shoulder cap c is shown as hinged to the main body portion b, as at c^6, and the joint thus formed may be protected by a suitably formed cover d which may be made of sole leather and stiffened by bands d^1 of thin metal riveted thereto, such cover being hinged at d^2 to the main body portion b.

It will be understood that the provision of an air chamber or air cushion between the semi-rigid shell and the body of the wearer may be accomplished by means differing in detail from what has been shown and described herein in order to adapt the improved protective armor to different parts of the body and for different specific purposes.

I claim as my invention:

1. A protective armor for football players and the like comprising a semi-rigid and impermeable shell shaped to conform to the body of the wearer, a substantially impermeable padding layer secured to the inner side of the shell, and an elastic webbing applied to the inner surface of the padding layer to draw it away from the shell and form between the padding layer and the shell an air chamber.

2. A protective armor for football players and the like comprising a semi-rigid and impermeable shell shaped to conform to the body of the wearer, a substantially impermeable padding layer secured to the inner side of the shell, an elastic webbing secured at one end to the shell, and adjustable means applied to the other end of the webbing whereby the same may be placed and held under tension to draw the padding layer away from the shell and form between the padding layer and the shell an air chamber.

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