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ATHLETIC PROTECTOR

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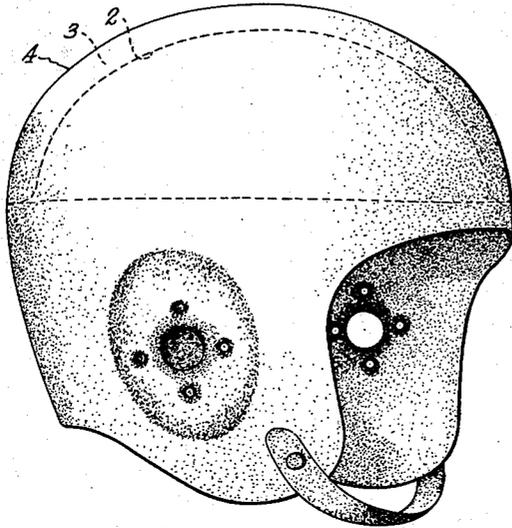


Fig. 1.

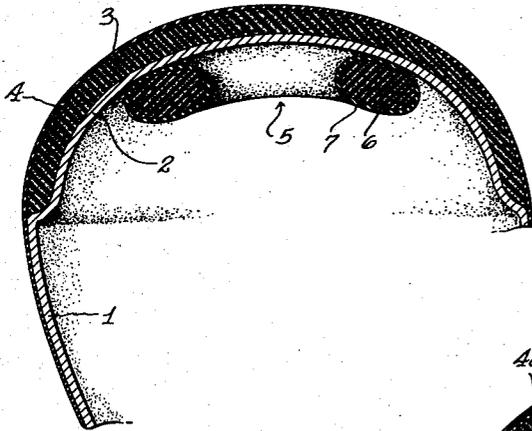


Fig. 2.

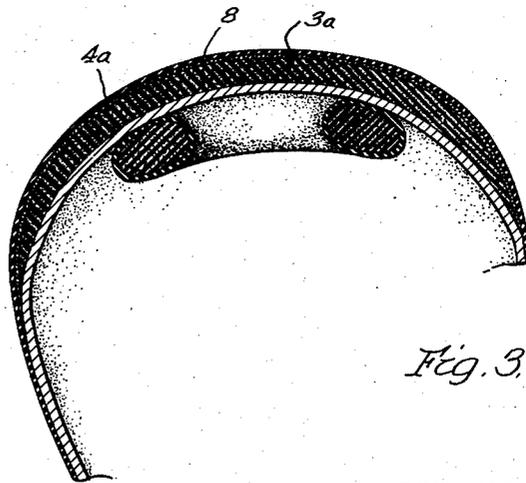


Fig. 3.

BY

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# UNITED STATES PATENT OFFICE

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## ATHLETIC PROTECTOR

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Detroit, Mich., a joint-venture company

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4 Claims. (Cl. 2—3)

This invention relates to athletic protectors such as are worn by players in various games, such as football for example, and has for its primary object to provide a protector having resilient material incorporated therein in such manner as to absorb considerable of the shocks resulting from impacts of other objects or persons therewith.

Athletic protectors of the type here concerned are usually composed of a shell-like main body portion of comparatively stiff material with padding incorporated therein to avoid discomfort to the wearer due to chafing resulting from its stiffness. This invention has for its object to provide such protectors with shock absorbing material externally thereof which tends to absorb a major portion of the forces resulting from impacts with other objects or players. In the case of the conventional protector the wearer is protected against bruising as the result of impacts but the full forces of such impacts are felt by the wearer. In the case of the present protector these forces are to a great extent absorbed so that the full forces of impacts are not felt by the wearer. This feature has particular utility in the case of football helmets which although comparatively stiff in the presence of severe impacts transmit stunning shocks to the wearer. The present invention absorbs sufficient of these forces to reduce the shock to the wearer.

Another object is to provide a protector comprising a stiff main body portion having a shock absorbing material in the form of sponge or foam rubber, with a casing of tough, durable rubber hermetically sealing the sponge rubber to assist in securing the sponge rubber to the main body and to protect it against damage and tearing.

Another object is to provide a padding member internally of the protector for contact with the body of the wearer, said padding being in the form of a toroid of sponge or foam rubber enclosed in a coating of tough durable rubber.

Other objects and advantages will become more fully apparent as reference is had to the accompanying drawing wherein my invention is illustrated, and in which

Fig. 1 is a side view of a protector,

Fig. 2 is a cross section of the protector, and

Fig. 3 is a cross section illustrating a modified construction.

More specifically 1 designates the main body portion of a protector which in the present instance is illustrated in the form of a football

helmet. The body portion 1 is formed of fibrous material or of suitable plastics molded or formed into the approximate desired shape. The crown portion of the body 1 is inset as illustrated at 2 and in this inset portion is a layer 3 of sponge or foam rubber. The rubber 3 is of substantial thickness and is secured to the body 1 by an adhesive. A layer 4 of comparatively tough rubber is then placed over the sponge or foam rubber and the exposed portion of the body 1.

The rubber 3 is preferably an emulsion of latex applied after the sponge or foam rubber has been adhered in place by spraying, brushing or dipping. The latex is then cured or vulcanized and adheres to both the rubber 3 and to the body 1 and constitutes an air impervious casing for the sponge or foam rubber. Other material than latex may be employed if desired. For example, the layer 4 might be composed of an elastic plastic known commercially as Koroseal, Polyvynol Chloride, Plexiglass, etc.

Some types of sponge or foam rubber have interconnected cells whereas in other types the cells are each separated from adjacent cells. In the case of the first mentioned types the latex or liquid coating has a tendency to penetrate to a substantial depth by permeating through one cell to another. In filling the cells the elasticity of the sponge rubber is reduced materially so in such cases it is desirable to prevent penetration of the coating material. To prevent this the rubber 3 is coated with a rubber cement such as rim cement for bicycle tires or a cement commercially known as Vulca-Lox which contain resins and which after being applied and allowed to dry will become tacky when heated. The rubber coating is applied over this cement and when the coating is vulcanized or cured the cement bonds the coating to the sponge rubber.

The rubber coating 4 provides a tough, durable casing which prevents tearing of the sponge rubber and assists in securing the sponge rubber to the fibrous shell or form 1. It also seals the sponge rubber hermetically and therefore reduces its tendency to oxidize.

To position the helmet on the head of the wearer a cushioning element 5 is provided in the crown thereof. The cushioning element comprises a toroid 6 of sponge or foam rubber enclosed in a casing 7 of tough, durable rubber. The casing 7 is applied to the sponge rubber in the same manner that the casing 4 is applied to the sponge rubber 3. The sponge rubber 6 is completely sealed within the casing 7 and its

resiliency is increased by thus trapping air within the cells of the rubber. The cushioning element 5 is preferably secured to the main body or shell 1 by a suitable adhesive.

Fig. 3 illustrates a modification wherein durability and appearance are improved. In this form a layer 8 of fabric is placed over the sponge rubber 3a, the fabric preferably having an open mesh. The coating 4a adheres to the sponge rubber 3a through the interstices in the fabric and when cured the pattern of the fabric is visible in the rubber coating.

In the form shown in Fig. 2 the inset 2 enables placement of a comparatively thick layer of sponge or foam rubber externally over the entire crown portion of the helmet. Fig. 3, however, illustrates the sponge rubber tapered so as to merge into the contour of the helmet. It will be understood, of course, that the sponge rubber 3a of Fig. 3 may be applied without fabric as shown in Fig. 2, or that the sponge rubber of Fig. 2 may be used with fabric as disclosed in Fig. 3.

Although specific embodiments of the invention have been illustrated and described, it will be understood that various changes may be made within the scope of the appended claims without departing from the spirit of the invention, and such changes are contemplated.

What is claimed is:

1. An athletic protector comprising a shell-like main body portion of comparatively stiff main body portion, said helmet having the crown portion inset with respect to the remainder of

the contour thereof, a layer of sponge rubber secured to the crown portion externally thereof, and a casing of tough, durable rubber bonded to the exposed surface of said sponge rubber.

2. An athletic protector comprising a shell-like main body portion in the form of a helmet, said helmet having the crown portion thereof inset with respect to the remainder of the contour thereof, a layer of sponge rubber in said inset, and a casing of air impervious rubber overlying the sponge rubber and surface bonded to the sponge rubber and the helmet.

3. An athletic protector comprising a shell-like main body portion of comparatively stiff main body portion, said helmet having the crown portion inset with respect to the remainder of the contour thereof, a layer of sponge rubber secured to crown portion externally thereof, a layer of open-mesh fabric overlying the sponge rubber, and a casing of air impervious rubber bonded to the sponge rubber through the interstices in said fabric.

4. An athletic protector comprising a shell-like main body portion of comparatively stiff main body portion, said helmet having the crown portion inset with respect to the remainder of the contour thereof, a layer of sponge rubber secured to the crown portion externally thereof, a casing of tough, durable rubber bonded to the exposed surface of said sponge rubber, and a padding within said body, said padding comprising a toroid of sponge rubber encased and sealed within a layer of air impervious rubber.

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