

March 17, 1970

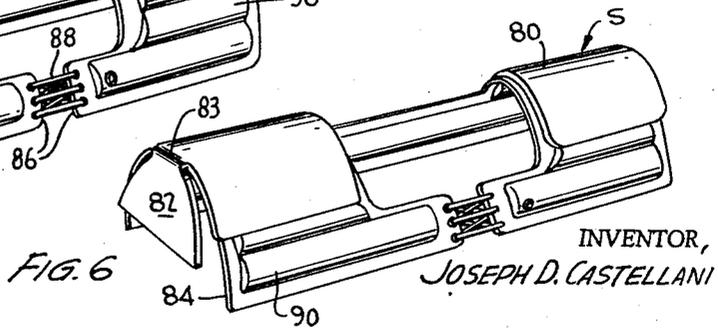
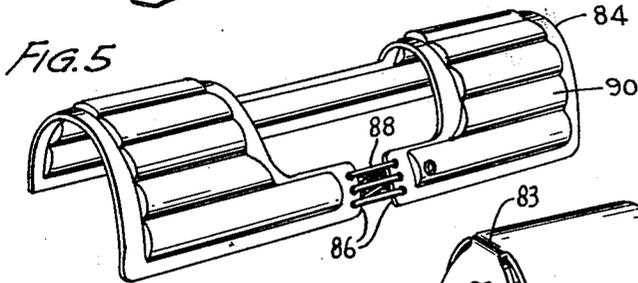
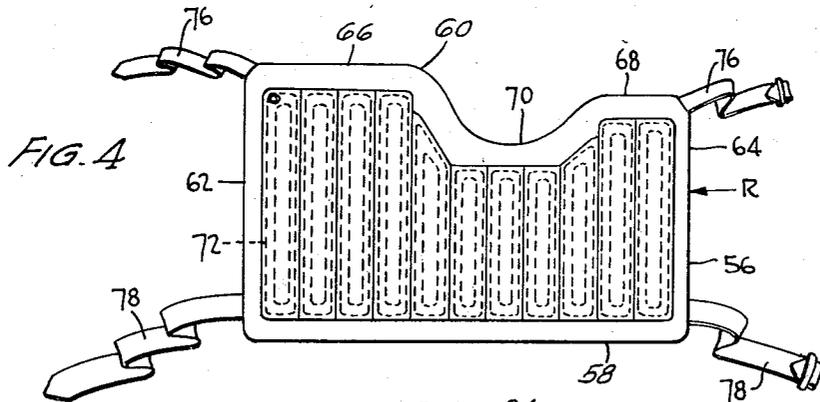
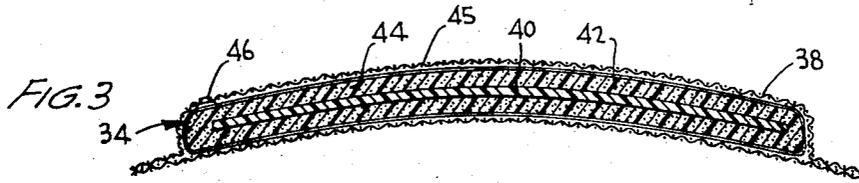
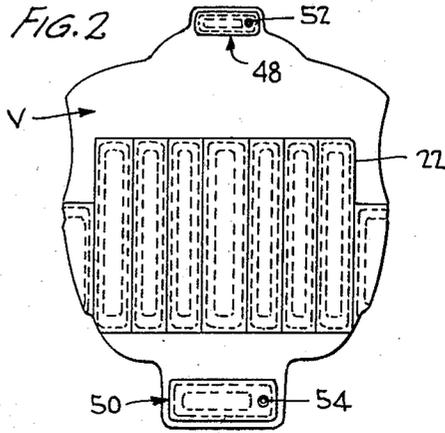
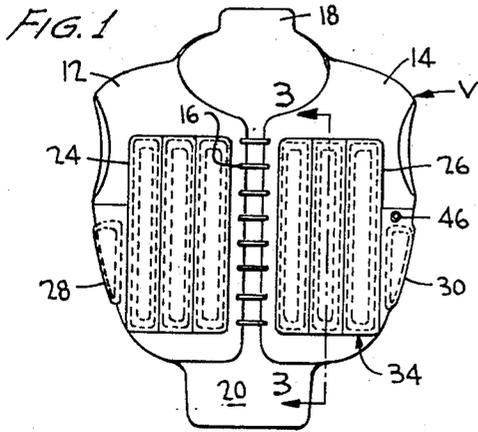
J. D. CASTELLANI

3,500,472

FOOTBALL AND BASEBALL EQUIPMENT

Filed May 13, 1968

2 Sheets-Sheet 1



INVENTOR,
JOSEPH D. CASTELLANI

BY *Jacobi + Davidson*
ATTORNEYS

March 17, 1970

J. D. CASTELLANI

3,500,472

FOOTBALL AND BASEBALL EQUIPMENT

Filed May 13, 1968

2 Sheets-Sheet 2

FIG. 7

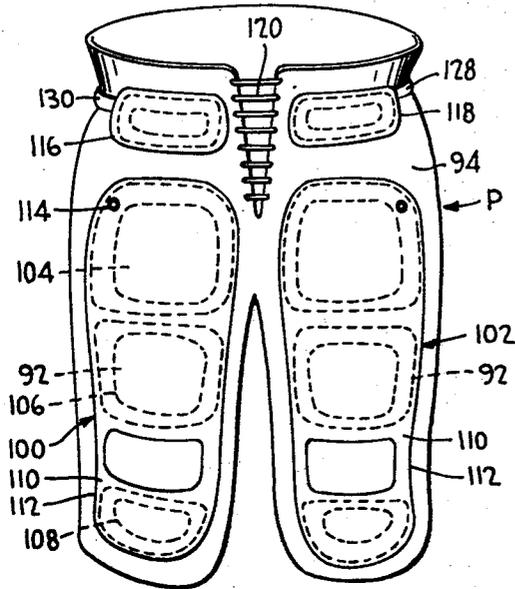


FIG. 8

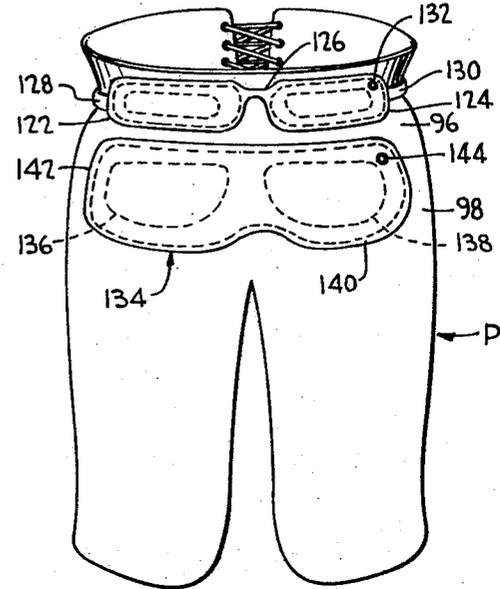


FIG. 9

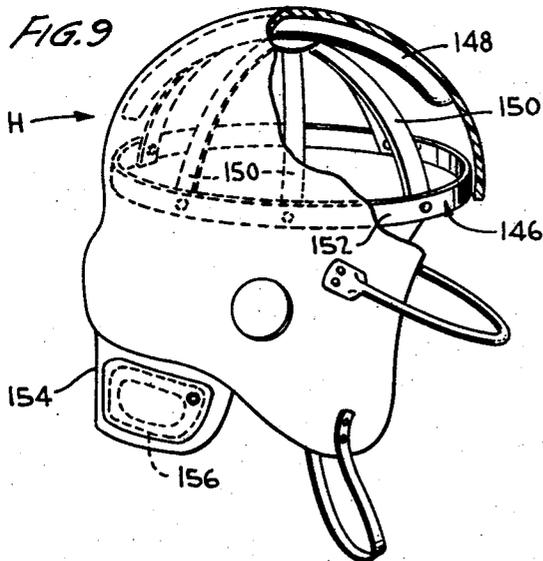
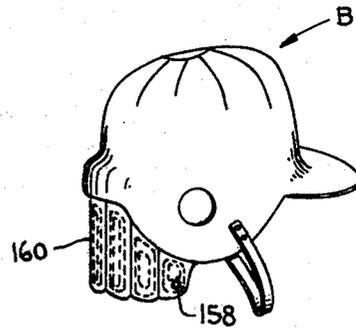


FIG. 10



INVENTOR,
JOSEPH D. CASTELLANI

BY

Jacobi & Davidson
ATTORNEYS

1

2

3,500,472

FOOTBALL AND BASEBALL EQUIPMENT

Joseph D. Castellani, 202 Josephine St.,
Peckville, Pa. 18452

Filed May 13, 1968, Ser. No. 728,520

Int. Cl. A41d 13/00, 13/06; A42b 1/08

U.S. Cl. 2-2

2 Claims

ABSTRACT OF THE DISCLOSURE

Football and baseball equipment provided with protection means to protect players against injuries when they are struck blows by other players or objects; the protective means comprises one or more cushioning units applied to garments worn by the players at the areas of the body to be protected; each cushioning unit comprises a relatively rigid member covered with a spongy material shaped to conform to the shape of the body part to be protected; the covered rigid member is enclosed within an inflatable chamber, having walls that are formed of a pliable nonporous material, that has been pressurized by the introduction of a gaseous medium.

BACKGROUND OF THE INVENTION

This invention relates to garments worn by athletes and more particularly to improvements in garments worn by the participants of such sports, as football and baseball, in which serious injuries often occur. It should be understood, however, that although the garments which form the present invention have been designed specifically for use by players of football or baseball, the basic concept is applicable to garments worn in connection with other sporting activities such as by soccer players and drivers of racing cars.

It is a well-known fact that many of the protective garments in use at the present time do not adequately protect the wearer. Even if they are provided with plates of metal or hard plastic intended to protect the wearer, such parts themselves often cause serious injuries to the wearer, his opponent or both the wearer and his opponent. It is, accordingly, a primary object of the present invention to provide the garments worn by athletes with a protective structure which not only protects the wearer against injury but, at the same time, presents no additional hazards for an opponent with whom the wearer may come into contact.

It is a general object of the invention to provide a garment with a flexible pocket coextensive with the region of the body of the wearer to be protected and to insert into such pocket a unit that comprises a rigid plate member shaped to conform to the shape of the part of the body to be protected which, in turn, is surrounded by cushioning material.

It is a further object of the invention to provide a garment having such a flexible pocket with a cushioning unit that comprises an inflatable enclosure containing therein a rigid plate member shaped to correspond to the shape of the part of the body that is to be protected and to surround said rigid plate member with a foam-like material that either partially or completely fills the inflatable enclosure.

A still further object of the invention is to provide a garment that covers the trunk of the body and takes the form of a safety vest or rib protector designed for the protection of the body organs and nerve centers, particularly the base of the skull, the base of the spinal cord and the area adjacent the kidneys by the provision of pockets to such garments overlying such body organs and nerve centers into which cushioning units are inserted.

An additional object of the invention is to provide football shoulder pads that include a plurality of flexible pockets into each of which a cushioning unit, comprising an inflatable enclosure containing therein a rigid plate member shaped to conform to the shape of the portion of the shoulder below it, which plate is enclosed in a foam-like spongy material, is inserted.

A further additional object of the invention is to provide football safety pants having portions arranged to protect the area between the lower waist line and the region above the groin as well as with portions arranged to protect the thigh and knee zones and in which the protecting portions include flexible pockets into which cushioning units are inserted.

A still further additional object of the invention is to provide a safety helmet including a neck protecting portion provided with flexible pockets into which are inserted cushioning units.

Another object of the invention is to provide a safety helmet that includes suspension straps to which a skull protection portion is attached which portion includes a flexible pocket into which is inserted a cushioning unit.

Still another object of the invention is to provide a garment for protecting a body portion of an athlete according to the teachings of the present invention which is simple in construction, durable and formed of material of relatively low cost.

The invention will be better understood and objects other than those set forth will become apparent after reading the following description thereof.

Such description refers to the annexed drawings presenting preferred and illustrative embodiments of the invention.

IN THE DRAWINGS

FIGURE 1 is a front view of a football safety vest constructed in accordance with the present invention.

FIGURE 2 is a rear view of the football safety vest shown in FIGURE 1.

FIGURE 3 is a sectional view taken through a cushioning unit forming a part of the present invention.

FIGURE 4 is a front view of a rib protector for baseball players to which cushioning units have been added.

FIGURE 5 is a front view of a protective unit to be used in cooperation with football shoulder pads.

FIGURE 6 is a front view of the protective unit of FIGURE 5 shown in association with shoulder pads.

FIGURE 7 is a front view of football pants to which cushioning means have been added.

FIGURE 8 is a rear view of the football pants of FIGURE 7.

FIGURE 9 is a view of a football helmet provided with cushioning means.

FIGURE 10 is a view of a baseball helmet provided with cushioning means.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, it is to be noted that the covering means or garment illustrated in FIGURES 1 and 2 constitutes a football safety vest indicated generally by the reference character V, formed of any suitable material, commonly employed in the manufacture of football garments, and may be, for example, leather, canvas, rayon or silk. Vest V has a back portion 10 and front panels 12, 14, the edges of which are brought together by a lacing member, such as a cord or string, 16. The vest V also includes a portion 18 which extends upwardly from back portion 10 and is arranged to overlie the back of the neck of the wearer. A similar portion 20 extends downwardly from the back portion 10

and is arranged to overlie the kidney area and the areas adjacent the kidney area containing vital body organs of the wearer.

The back portion of the vest V includes a support means for a plurality of cushioning units 34. The support means may be formed by a portion of the material which forms the vest V in conjunction with a separate sheet of flexible material which is secured to the back portion 10 by stitching it or otherwise securing it to the back portion 10. It could also be formed by material other than that which is part of the vest. For the purpose of simplicity of description, no matter which of the above arrangements is employed to form a support means to secure the cushioning units to the garment, the arrangement will, hereinafter, be referred to as "pocket means" 22.

Similarly, each of the front panels 12 and 14 is, respectively, provided with an arrangement similar to "pocket means" 22 and will be referred to as flexible "pocket means" 24, 26. In a like manner, the portions of the vest 28 between the front portion 12 and the back portion 10, as well as the portion of the vest 30 between front portion 14 and back portion 10, may include "pocket means."

The "pocket means" referred to above may be formed as a single, relatively large, pocket or, when desired, by means of stitching, gluing or otherwise, as a plurality of smaller separated pockets. Moreover, the material from which the "pocket means" is formed may be porous or non-porous, but it is often especially desirable to form those portions of the pockets closest to the body of non-porous material.

Supported by, and within each of the pockets, there is provided an expandible cushioning unit 34 which, when expanded, substantially fills the pocket. Such a cushioning unit is illustrated in greater detail in FIGURE 3 of the drawings.

The cushioning means 34 may be designed to be of such size that when inserted into a pocket means and inflated, relative movement between the cushioning means and the pocket means will be reduced to a minimum. On the other hand, if the cushioning means is substantially smaller than the pocket means into which it is to be received, the cushioning means may be secured within the pocket means, for example, by stitching or gluing it to the wall of the pocket means. It could also be retained in the pocket means by a device which closes the pocket means opening, such as a zipper, not illustrated.

FIGURE 3 shows in cross section, a portion of a garment 36 that is provided with pocket means 38, of flexible material, adapted to cover, in overlying relation, an area of an athlete's body which it is desired to protect against injury. The cushioning unit 34, which is received in the pocket means 38, includes a plate member 40 formed from any well known hard material such as plastic, hard rubber or fiberglass that is shaped to conform to the shape of the area of the athlete's body that it is intended to protect. The plate member 40 is covered by a soft spongy or similar material 42 and the plate member so covered is enclosed in an inflatable air, or other fluid, chamber 44 having an outer wall 45 of rubber, pliable plastic or other suitable similar nonporous material. The wall 45 of the inflatable fluid chamber 44 is provided with a fluid inlet valve 46 and when the chamber 44 is pressurized, its walls 45, as well as the fluid under pressure and the soft spongy material contained therein will resist and diffuse the effects of impacts to which the wearer of the garment may be subjected in the region of such impact.

In the embodiment shown in FIGURE 1, the vest V is provided with but one valve 46 for the introduction of fluid under pressure into all the fluid chambers associated with the back of the vest 10, the front panels 12 and 14 and the portions 28 and 30 between the back 10 of the vest V and the front panels 12, 14. With such an arrange-

ment of cushioning units located at the back 10, front panels 12, 14 and vest portions 28, 30, and fluid chambers 44 thereof are interconnected by means of restricted openings (not shown). It should be apparent, however, that due to such restricted intercommunication between the fluid chambers, the sudden loss of pressurizing fluid from a particular fluid chamber, or group of fluid chambers, as a result of a hard blow being applied to a particular fluid chamber or group of fluid chambers, is precluded.

The portion 18 of the vest V, which extends upwardly from the back portion 10, overlies the back of the neck of the wearer of the vest V and provides a conventional protective cover for the region of the wearer behind the base of his skull. This overlying portion, may, if desired, have secured thereto a pocket (not illustrated in the drawings). A cushioning unit 48, having a construction similar to cushioning unit 34, illustrated in FIGURE 3, and differing therefrom only in shape, would be secured to overlying portion 18 or contained in a pocket located in said portion 18 so that the wearer of the vest V is further protected by a cushioning unit 34 against injury to his neck by severe blows to which he may be subjected.

The portion 20 of the vest V, which extends downwardly from the back portion 10 of the vest V and overlies the area of the wearer in the vicinity of his kidneys and other adjacent vital organs may also, if desired, be provided with a flexible pocket (not illustrated in the drawings). A cushioning unit 50, having a construction similar to the cushioning unit 34, illustrated in FIGURE 3, and differing therefrom only in shape, would be provided in such flexible pocket. Thus, the kidneys and adjacent vital organs of the wearer are also further protected against injury when the wearer is struck a severe blow in this region of his body by, for example, another player. Since cushioning units 48 and 50 are spaced a substantial distance from the fluid chambers 44 associated with the back portion 10 and front panels 12, 14, each of these cushioning units is, respectively, provided with an independent fluid inlet valve 52, 54 for the introduction of pressurizing fluid thereto.

FIGURE 4 of the drawings illustrates the inventive concept, previously described in its application to a football safety vest V, applied to a rib protector R for use by baseball players when they are at bat.

Rib protector R has a covering means 56 formed of any well known covering material similar to that usually employed in the fabrication of chest protectors for baseball catchers and umpires. The protector R has a straight line lower edge 58, upper edge 60 and side edges 62, 64. Upper edge 60 has spaced straight line end portions 66, 68 interconnected by a concave interconnecting portion 70. Pocket means (not illustrated in the drawings) of any well known durable flexible material may, if desired, be secured to the outer surface of the rib protector R. Such pocket means would be provided with cushioning units 72 each of which is similar to the cushioning unit 34 illustrated in FIGURE 3. They differ from said cushioning unit 34 solely in size and shape in order that they may conform in size and shape to the size and shape of the flexible pocket means into which they may be inserted. Since the walls 45 of the cushioning units 72 each have a common wall or contacting adjacent walls, they may be interconnected by a restricted orifice arrangement (not shown) similar to that provided for the introduction of a gaseous fluid, such as air, through a gas inlet valve 74, into the gas chambers 44 of the cushioning units 34 of the football vest V, illustrated in FIGURES 1 and 2 of the drawings. The rib protector R is provided with the usual strap means 76, 76 and 78, 78 which enable it to be readily mounted on, or removed from, the body of the player.

In use the protector R is worn by a batter with the concave portion 70 thereof placed under an armpit and the ends of the respective straps 76, 76 and 78, 78 secured

together. It can be readily seen that, due to the shape of the upper edge 60 of the protector R, and particularly the disposition of the concave portion 70, the protector R may be worn by either right hand or left hand batters simply by placing the concave portion 70 under one or the other of the batter's armpits.

Some of the advantages of providing a rib protector, such as R, for a baseball player while he is at bat, are believed to be apparent. For example, the likelihood of his being injured by a hard pitched ball delivered by a pitcher is reduced to a minimum. Moreover, since the batter is aware of the fact that he is protected against injury, any uneasiness that he might otherwise experience is eliminated. Accordingly, because he is able to concentrate to a greater degree on hitting the ball, an improvement in his battering average generally results.

In FIGURES 5 and 6, the inventive concept is illustrated as applied to football shoulder pads S. The shoulder pads S include a pair of shoulder protectors 80, 80 to the ends of which leather wing members 82 (only one of which has been illustrated) are attached by straps such as strap 83. A protective unit 84 is secured, for example, by stitching (not shown) within the shoulder protectors 80, 80. The protective unit 84 is so designed that when it is placed on the shoulders of a football player, its cushioning units extend downwardly to a region where they closely approach the cushion units 34 provided in the vest V, illustrated in FIGURES 1 and 2 of the drawings. Protective unit 84 is open at its front and its ends 86, 86 are drawn together by lacing 88. Its outer contour closely conforms to the internal contour of the shoulder protectors 80.

Pocket means (not illustrated in the drawings) may be provided for receiving cushioning units 90 and such cushioning units are constructed, except for their specific shape, in the same manner as cushioning units 34 illustrated in FIGURE 3 of the drawings. As pointed out in connection with football safety vest V and rib protector R, the cushioning units 90 absorb as well as distribute impacts applied to the shoulder pads S, and because of this ability to absorb as well as distribute the effects of such impacts, numerous injuries, which might otherwise occur to players wearing conventional shoulder pads, are eliminated.

In FIGURES 7 and 8, the inventive concept is illustrated as applied to football safety pants P. Football pants P are provided with safety protective means located, for example, so as to protect (1) the region 92 overlying each knee and thigh; (2) the region 94 overlying the groin; (3) the region 96 overlying the kidney; and (4) the region 98 overlying the buttock.

The football pants are made from a strong, light weight material such as nylon, rayon or a mixture of silk with cotton and provided in the regions set forth above with inflatable protection means to be described. The pants are made of such a size that when the inflatable protection means are deflated they are easily put on and taken off. However, when the inflatable protection means are inflated, they become body tight. This enables the football player not only to look very slick but makes his pants difficult to grab. Moreover, since the pants are provided with chambers containing air, the areas overlying such chambers cannot become water-soaked.

The inflatable protection means provided for the protection of the knees and thighs, each, comprises, preferably, a pocket of flexible material (not illustrated in the drawings) into which are inserted cushioning units 100, 102. The cushioning units 100, 102 each comprise a pair of spaced relatively rigid plate members 104, 106, of any well known hard material such as plastic, hard rubber or fiberglass, that is surrounded by a layer of sponge or other soft pliable material, and shaped to conform to the portion of the body at the thigh and a similar plate 108 of hard material shaped to conform to the shape of the knee and surrounded by a layer of sponge or simi-

lar soft pliable material. The hard plate members 104, 106 and 108 that are surrounded by the soft pliable material are enclosed in an inflatable air or other fluid chamber 110 having an outer wall 112 provided with a fluid inlet valve 114.

The inflatable protection means provided for the region 94 overlying the groin comprises cushioning units 116, 118 located on opposite sides of the lacing 120. Similarly, the inflatable protection means, provided for the region overlying the kidneys, comprises cushioning units 122, 124. The gas chambers of cushioning units 122, 124 are interconnected by a passage means 126 while the gas chambers of the cushioning units 118 and 122 are interconnected by passage means 128, and cushioning units 116 and 124 are interconnected by passage means 130. A fluid inlet valve 132 is provided in the wall of cushioning means 124 for the introduction of air or other gaseous fluid into the gas chambers of cushioning means 116, 118, 122, 124.

The football pants are also provided with a cushioning unit 134 for the protection of the player's buttock. This unit comprises a pair of spaced relatively rigid plate members 136, 138 of any well known hard material such as plastic, hard rubber or fiberglass, that is surrounded by a layer of sponge or other soft pliable material, and shaped to conform to the shape of the portion of the player's buttock that it overlies. The hard plate members 136, 138 that are surrounded by the soft pliable material are enclosed within an inflatable air or other gaseous fluid containing chamber 140 having an outer wall 142 provided with a fluid inlet valve 144. The outer wall of the fluid containing chamber 140 is provided with a fluid inlet valve 144. The pants may also be provided with air vents, not illustrated, if desired, located on the inner thigh of the leg.

FIGURE 9 of the drawings illustrates the inventive concept applied to a football safety helmet H. The safety helmet H includes protecting portions for the skull, ears and back of the neck. Mounted within the skull protecting portion of the safety helmet H is a cushioning construction 146. The cushioning construction 146 comprises a cushioning unit 148, similar, except for its specific shape, to the cushioning unit 34 illustrated in FIGURE 3. This cushioning unit 148 is attached to one end of a plurality of straps 150. The other end of the straps 150 are attached by any conventional means to an annular band 152 engaged within the inner periphery of the skull protecting portion of the helmet H.

The back of the neck protecting portion 154 of the football safety helmet H is provided with a cushioning unit 156 which is similar, except for its specific shape, to the cushioning unit 34 illustrated in FIGURE 3. Added protection is, however, provided for the back of the neck of a football player by extending the neck protecting portion 154 downwardly sufficiently so that it is met by the top portion of the protective vest V illustrated in FIGURES 1 and 2. In addition to providing a cushioning function to the player, the fluid contained under pressure within the cushioning unit of the safety helmet H cuts down the noise caused by vibrations and enables the player to hear the plays called clearly.

FIGURE 10 of the drawings illustrates the inventive concept applied to a baseball helmet B. Baseball helmet B has a protecting portion 158 extending downwardly from the body of the helmet and arranged to overlie the back of the neck of the player. Secured to downwardly protecting portion 158 of the helmet B is a group of cushioning units 160, similar, except for shape, to the cushioning unit 34 illustrated in FIGURE 3. It is believed to be apparent that that fluid under pressure contained in the cushioning units 160 renders harmless impacts caused by hard pitched balls striking the downwardly protecting portion 158 at the back of the neck of a batter.

Although the invention has been described as applied to specific athletic equipment, it is to be understood that

It is not intended to be so limited but may be applied to other athletic equipment where a cushioning effect is desirable or necessary.

After reading the foregoing detailed description, it will be apparent that the objects set forth initially have been successfully achieved. Accordingly,

What is claimed is:

1. A garment such as a vest for protecting an athlete against injury comprising a back covering portion; a pair of front covering portions each interconnected with said back covering portion by a side covering portion; said front covering portions being joined together by a lacing means; a neck covering portion extending upwardly from said back covering portion and a kidney covering portion extending downwardly from said back covering portion; said back covering portion, said front covering portions, and said side covering portions each having means cooperating therewith to form a plurality of longitudinally extending pocket means at each said back covering portion; said front covering portions and said side covering portions; said neck covering portion and said kidney covering portion each having means cooperating therewith to form a pocket means at each said neck covering portion and said kidney covering portion; inflatable means enclosed by each of said pocket means; relatively rigid plate means surrounded by a soft spongy material within each said inflatable means shaped to conform to the shape

of the body portion covered by said covering portions and fluid passage means interconnecting all of the inflatable means enclosed by said plurality of longitudinally extending pocket means covering said back portion, said front portions and said side portions.

2. A garment as defined in claim 1 wherein said interconnecting fluid passage means includes means restricting the fluid flow between interconnected inflatable means.

References Cited

UNITED STATES PATENTS

1,602,454	10/1926	Riddell	2-23
2,266,886	12/1941	McCoy	2-2
2,657,385	11/1953	Cushman et al.	2-24
2,773,791	12/1956	MacIver	2-2.5 XR
3,337,875	8/1967	Blakeney	2-2.5

FOREIGN PATENTS

1,112,995	11/1955	France.
530,434	7/1940	Great Britain.

JAMES R. BOLER, Primary Examiner

U.S. Cl. X.R.

2-3, 22