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Mitchell

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[54] **ATHLETIC PROTECTIVE EQUIPMENT**

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[52] **U.S. Cl.** **2/2.5**

[51] **Int. Cl.** **F41h 1/02**

[58] **Field of Search** 2/2

[56] **References Cited**

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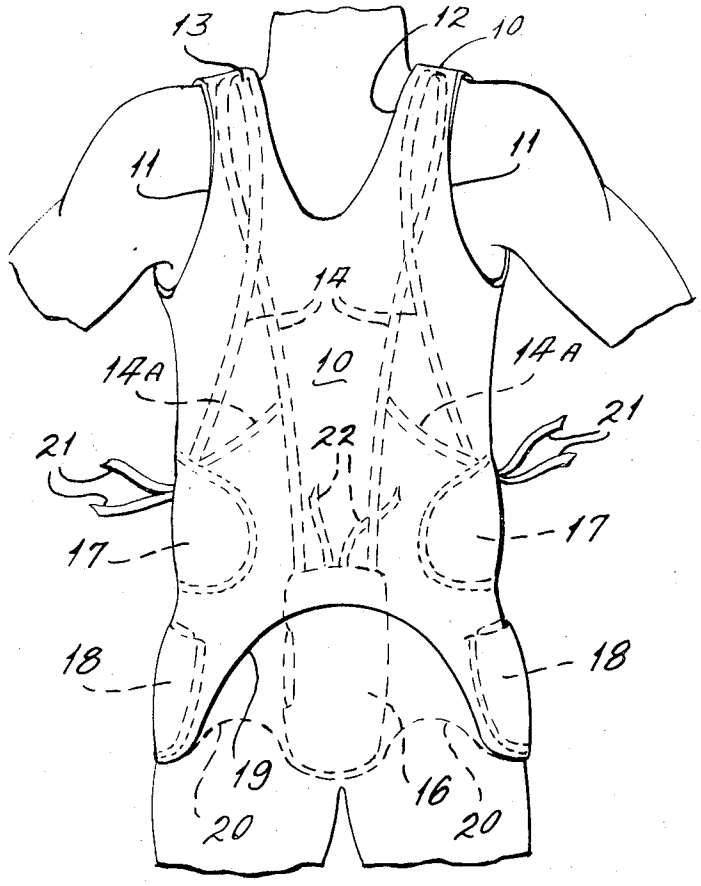
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[57] **ABSTRACT**

Protective equipment for players of football and other athletic activities and games in which bodily contact is significant. The equipment provides protection for the torso, hips and thighs in a manner to meet the anatomical needs of the athlete during competition whereby improved maneuverability, efficiency and protection is obtained without cumbersome components.

10 Claims, 5 Drawing Figures



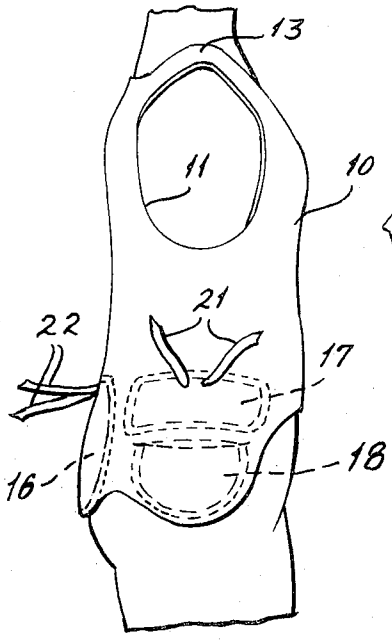


FIG.1

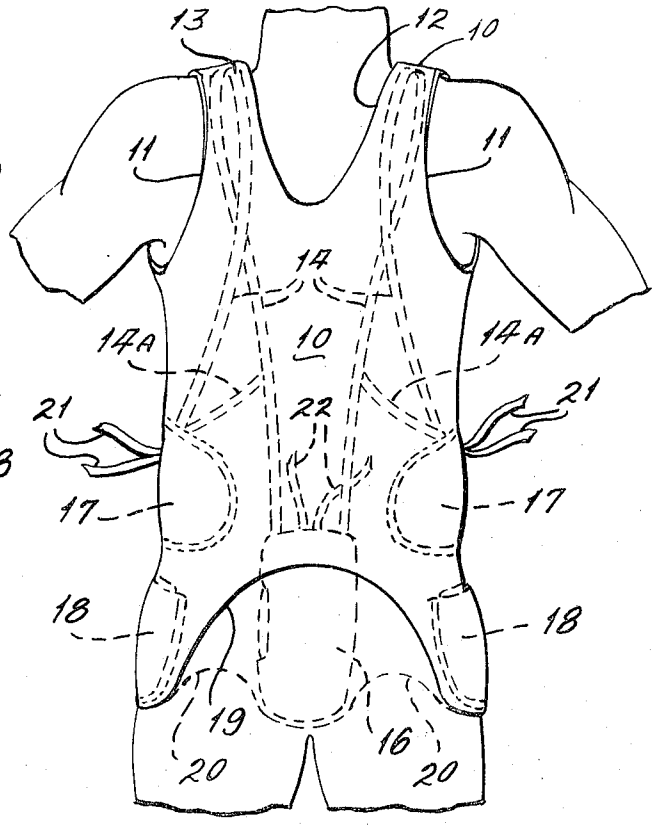


FIG.2

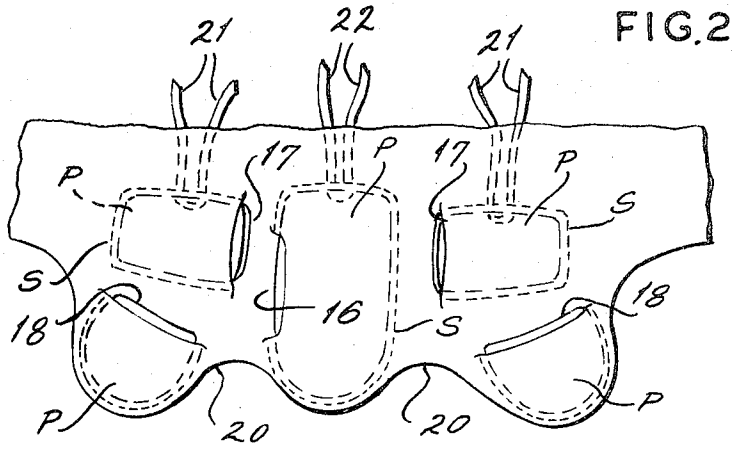


FIG.3

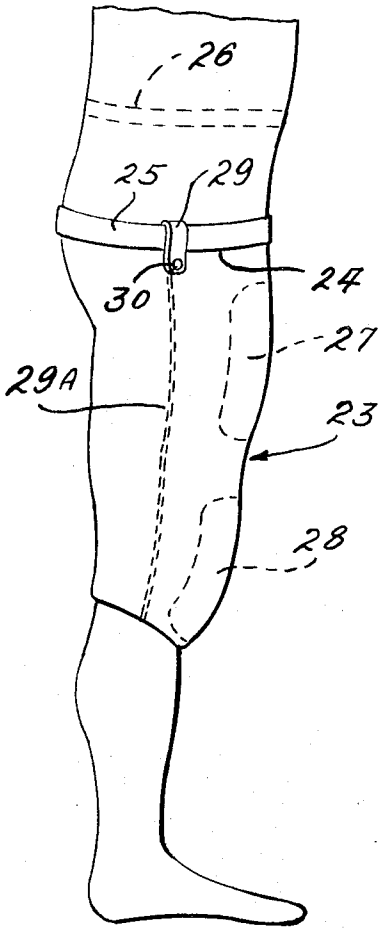


FIG.4

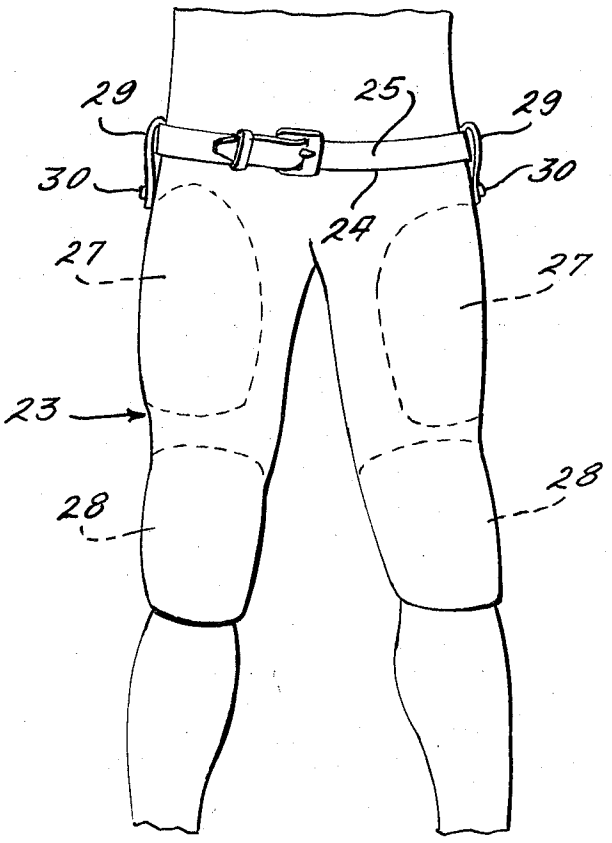


FIG.5

ATHLETIC PROTECTIVE EQUIPMENT

BACKGROUND OF THE INVENTION

This invention relates to improved athletic protective equipment for meeting the anatomical needs of bodily contact games, and especially football games.

As football requires hard body contact on the part of the participants, protective padding is of primary concern. Continual scientific analysis is needed to insure that players have maximum protection from injury. In the last decade a moderate amount of research has been done on the head-gear, and several outstanding contributions to head protection have been made. There, however, is no evidence that research of any consequence has been conducted on the other parts of the football players' protective equipment. The original designs of hip, shoulder, and thigh pads, and their suspension systems have not been substantially changed in the last 50 years. These traditionally designed articles of equipment have not only been something less than optimum in terms of protection but also have limited flexibility and have imposed restrictions on the players' performances. The problem of providing a more functional system of padding that allows greater freedom and maneuverability along with better protection has been neglected. A new design of protective equipment for the torso, hip, and thigh is needed to afford greater protection, maneuverability, and flexibility, whereby a substantial contribution to the sport of football can be made.

Hip pads are a part of the gear worn to cover the lower extremities. Commonly, these pads have been secured to the body with a belt or girdle. This belt has been worn as a part of the hip pad, or in some cases, the belt in the pants has been used to stabilize the hip pad. In other types of hip pads, the pads have been sewn into a pair of shorts that were worn underneath the pants as a separate unit.

When hip flexion occurs, there is a change of distance over the buttocks. During exercise these changes in distance have caused a continual downward pull on the hip pads and pants. This downward pulling has had a tendency to pull the hip pad away from the crest of the illium which it was designed to protect. With the hip pad down out of position, painful hippoint injury can occur. Many stretch materials have been introduced into football pants to overcome this problem, but it has been ultimately necessary to have a tight belt around the waist to hold the top of the pants in place.

Functionally, the crest of the illium is part of the pelvic girdle. The illium does not move with the legs; it is stabilized by the muscles of the trunk. A pad that adequately protects the illium crest must be suspended in such a way that it will function independently from the movement of the legs.

Another problem has been caused by the hip pad and the belt that has usually been connected with it. When the athlete has attempted to bend over, the belt has become a harness that limited his flexibility by restricting natural changes in body dimensions. The solution to this problem is an suspension system that allows the hip pad to remain in position without a restrictive belt or girdle.

The thigh pad has been closely associated with the hip pad problem and has needed to be examined. As the legs move, the forces caused by the continual change of distance has pulled down on the belts of the hip pad and pants, causing the pants to loosen and sag. As the thigh pads were associated with the pants, they also have become loose and sagged downward. This condition has left the upper part of the thigh unprotected and added to the danger of injury.

The loosened thigh pad can also cause injury when it strikes the underlying tissue, acting as a missile that is propelled by a blow. A padding system has been needed that would suspend the thigh pad in such a way that it would remain in place and not be affected by the loosening of the hip pad and pants. This pad would remain tight on the leg at all times providing better protection for the athlete.

The game of football has always produced various injuries. The risks involved have long been a concern of coaches, football players and parents. In 1964, 26 young men died of football injuries. There has been a continuing cry for the abolishment of what some call a brutal sport.

Insurance companies have raised their premiums to a point where providing insurance for the football program has become a major problem facing athletic directors. Records from three midwestern states suggests that almost 70 percent of the claims paid by insurance companies for athletic injuries were for football.

The factors listed in the preceding paragraphs have caused considerable public concern. A few rules have been changed to satisfy the demand for safety. In 1955 the National Football League passed a rule requiring each player to have a minimum face guard. These minimum suggested precautions are now universal in their application. In the last two decades rules governing types of shoe cleats and the use of various hard, unyielding surfaces have been added to the rule book. Rules governing play have also been strengthened to prohibit certain kinds of clipping; also the use of hands on defense has been reinterpreted.

A thorough search of the literature revealed that the vast majority of research on football equipment has been in the area of head and face protection. The rest of the football uniform has not been challenged or tested. There has been a great need to research and examine the protective gear that serves to protect the rest of the athlete's body.

An important object of this invention is to provide the athlete with protective padding equipment that will allow greater flexibility and maneuverability whereby there results improved performance in critical situations that could otherwise result in injury.

Another important object of this invention is to provide a system of protective equipment that holds the padding more consistently in proper position over the areas of the anatomy requiring protection, thereby avoiding many strains and bruises.

Other important objects of this invention will be described and set forth in regard to a preferred embodiment of protective equipment particularly directed toward athletes who play football, but this is not intended to impose unnecessary limitations on the scope of the disclosure.

A preferred embodiment of the equipment comprises a vest suspended from the shoulders and to which are attached certain protective padding, and pants having a low garter belt located around the pubis where the normal body bending action takes place, thereby avoiding the pull and dislocation of the vest and pants, avoid-

ing movement of the padding and improving the consistency of protection with greater maneuverability.

BRIEF DESCRIPTION OF THE DRAWINGS

The present athletic protective equipment is shown to advantage in the accompanying drawings, wherein:

FIG. 1 is a fragmentary side view of the athlete's body having the vest component in normal position for suspension of the protective padding;

FIG. 2 is a front view of the vest and padding components;

FIG. 3 is a fragmentary developed plan view of the manner of mounting the padding components shown in the previous views;

FIG. 4 is a fragmentary side view of the pants and padding components; and

FIG. 5 is a fragmentary front view of the showing of FIG. 4.

DETAILED DESCRIPTION OF THE PROTECTIVE EQUIPMENT

A first step in structuring the improved protective equipment is carried out by providing a vest suspension component to which the hip pads, trochanter pads and sacrum pad are attached for consistency of positional placement.

As may be seen in FIGS. 1, 2 and 3, a suspension vest 10 has ample cut-outs 11 for the arms and a cut-out 12 for the neck. The vest shoulder straps 13 may be trussed with reinforcing straps 14 that pass over the shoulders and extend downwardly at the front and rear to the padding components to be noted. The vest 10 is necessarily of a length for the anatomical needs of the athlete, and it can be made entirely of elastic stretch material which is also most desirable for the lower abdomen and pelvic girdle encircling area. The elastic material, on the other hand, may be coextensive with only the lower portion of the vest 10 for reinforcing that portion of the vest.

In FIG. 3 it can be seen that the interior of the vest 10 in the pelvic girdle area is provided with pockets formed by stitching patches P of the same stretch or knit material onto the vest, but leaving openings. The patches are outlined by the stitch lines S. The central pocket is adapted to receive the elongated sacrum pad 16, the two upper side pockets receive hip pads 17, and below the hip pads are pockets for the trochanter pads 18. The lower margin of the vest has a wide front cut-out 19 and the rear has a pair of cut-outs 20. The cut-outs 19 and 20 remove material that might interfere with or restrict leg movement, and they also decrease the chance of the vest being pulled out of position.

As can be seen in FIGS. 1 and 3, the sacrum pad 16 is disposed in a suitable pocket of the suspension vest 10 over the rear sacrum area of the athlete. It can also be seen in FIGS. 2 and 3 that the front portions of the reinforcing straps 14 have the lower ends attached to the respective pockets for the hip pads 17. The rear portions of the straps 14 extend down to the pocket for the sacrum pad 16, and lateral reinforcing straps 14A branch off for connection to the rear portions of the pockets for the hip pads 17. The manner for arranging the reinforcing straps 14 and 14A affords positive support and positioning of the pockets for the hip pads 17, which pads are curved to fit around the hip area at each side. With hip pad pockets connected to the reinforcing straps 14 and 14A, the suspension vest 10 also affords proper support and positioning of the trochanter and sacrum pads 16 and 18.

It is also seen in FIGS. 1, 2 and 3 that the pockets for the hip pads 17 and sacrum pad 16 have the tie laces 21 and 22 respectively to be laced and tied into the pants in a manner to appear. The use of elastic stretch material throughout or as reinforcement for the abdomen and pelvic girdle area in the suspension vest 10 results in the excellent retention of the various pads snug on the body. The tie laces 21 and 22 serve to hold the upper part of the pants in place and stabilize the upward movement of the pads, and do not interfere with changes of dimensions due to body bending motions. The result is that the tie laces act as pad anchors when connected into the pants.

Turning now to FIGS. 4 and 5 it can be seen that the pants 23 have the leg portions extending down over the knees from the upper margin 24 defined by the low garter belt 25 which does not rise above the pubis. In the normal construction of pants, the upper margin is usually located at or near the navel position shown in broken line at 26 in FIG. 4. Thus the upper pants margin 24 is located at the elevation where the body normally bends and so pull over the buttocks is avoided.

The pants are formed with suitable interior pockets to receive the thigh pads 27 and knee pads 28. In donning the pants 23, the elastic garter belt 25 is put on first over the vest 10. Next the pants are pulled on the upper margin 24 moved up to the belt 25 so that the side stretch straps 29, sewed to the pants at the top of the side seam 29A may be looped under the belt 25 with the free end snapped into position by snaps 30. The loop straps 29 carry the wieght of the pants 23 from the belt 25 and afford pants suspension laterally of the body along the line where there is little or no change in dimension during activities. The rear of the pants can be pulled up sufficiently over the buttocks to cover the lower rear part of the suspension vest 10.

With the vest and pants fully placed, the tie laces 21 and 22 may be tied through eyelet openings (not shown) in the pants. In this protective uniform the pants and vest are made to hold the protective pads in proper positions at all times so that they work together without pull or strain, thereby avoiding what has been a common objection of prior uniform systems. The pad suspension system is substantially all on the lateral sides of the uniform, and there is now no belt around the athlete's belly to cause restriction.

There has been described in the above specification an improved athlete uniform system in which certain protective pads are suspended by a vest and in which the upper margin of the pants is suspended by an elastic belt located at the pubis elevation. The improved system of protective equipment is tied together in such a manner that strain and pull in athletic play is substantially eliminated, the mobility of the arms and legs is not restricted and most importantly the protective pads are located and stabilized in proper positions.

What is claimed is:

1. Athletic protective equipment consisting in a vest having shoulder straps and extending downwardly to a lower margin adjacent the pubis and buttocks regions of the wearer, padding for the hips, trochanter and sacrum carried by said vest, a garter belt disposed substantially at the pubis area of the wearer, leg covering pants having an upper margin at said belt, and means

on said pants connecting its upper margin to said belt for pants suspension support from said belt.

2. The equipment of claim 1 in which said vest includes elastic stretch material in its lower portion adjacent said padding, said material retaining said padding snuggly in position.

3. The equipment of claim 1 in which reinforcing straps are included in said vest and extend over the shoulders of the wearer and connect to the area of said padding carried by said vest.

4. The equipment of claim 1 in which tie laces extend from said hip and sacrum pads, and said pants have openings into which said tie laces are anchored, whereby said pad positions are stabilized.

5. The equipment of claim 1 in which said garter belt is elastic stretch material, and said means loops around said belt at the lateral sides of said pants.

6. The equipment of claim 1 in which said lower margin of said vest is covered by the upper margin of said pants, and said tie laces tie through said pants.

7. In athletic protective equipment the improvement which includes a vest covering the upper body of the wearer and formed with arm and neck cut-outs to form shoulder straps, elastic stretch material combined with the lower portions of said vest and formed with pockets at the sides and rear of the wearer's body, padding disposed in each of said pockets, an elastic garter belt disposed adjacent said padding, pants having means thereon to connect with said belt to support said pants, and other means connecting certain of said padding pockets to the adjacent portions of said pants, said pants connecting means being disposed at the sides of the wearer's body.

8. The equipment improvement of claim 7 in which said elastic garter belt is disposed about the wearer's body substantially at the elevation where antomical bending occurs, and one of said vest supported padding is disposed over the sacrum of the wearer's body.

9. The equipment improvement of claim 7 in which said elastic garter belt is disposed about the wearer's pelvic girdle, certain of said vest supported padding are disposed over said body hip locations, and said other means connects to said pants to stabilize said hip padding.

10. The equipment improvement of claim 7 in which said elastic garter belt is disposed about the wearer's pelvic girdle, thigh pads carried in said pants, and said pants support means acts to retain said thigh pads in stable positions.

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