United States Patent [19]

Woodcock

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[54] **LEG GUARD**

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[73] Assignee: **A-T-O Inc.**, Willoughby, Ohio

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[52] **U.S. Cl.** **2/22**

[51] **Int. Cl.** **A41d 13/00**

[58] **Field of Search** 2/22, 24, 23, 16, 2/2, 62

[56] **References Cited**

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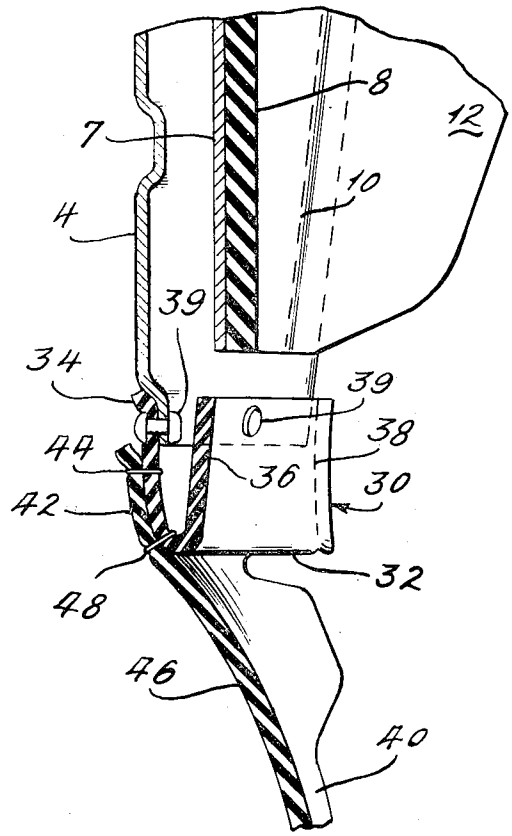
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[57] **ABSTRACT**

A leg guard for use by hockey players includes a relatively rigid shin piece and a knee cap, both of which are connected together and backed by a padding material. A flap connects with the lower end of the shin piece, and that flap may either be folded backwardly across the lower end of the shin piece and into the interior of the leg guard, or else it may be extended and caught under the tongue of the skate shoe to provide additional protection for the player's instep. The padding behind the knee cap retains an auxiliary pad which wraps around the player's leg at the knee, and that auxiliary pad affords added protection for the fibro cartilage and helps protect the medial collateral ligaments by stabilizing the medial and lateral condyles when impacts are received at the knee.

11 Claims, 7 Drawing Figures



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SHEET 1 OF 2

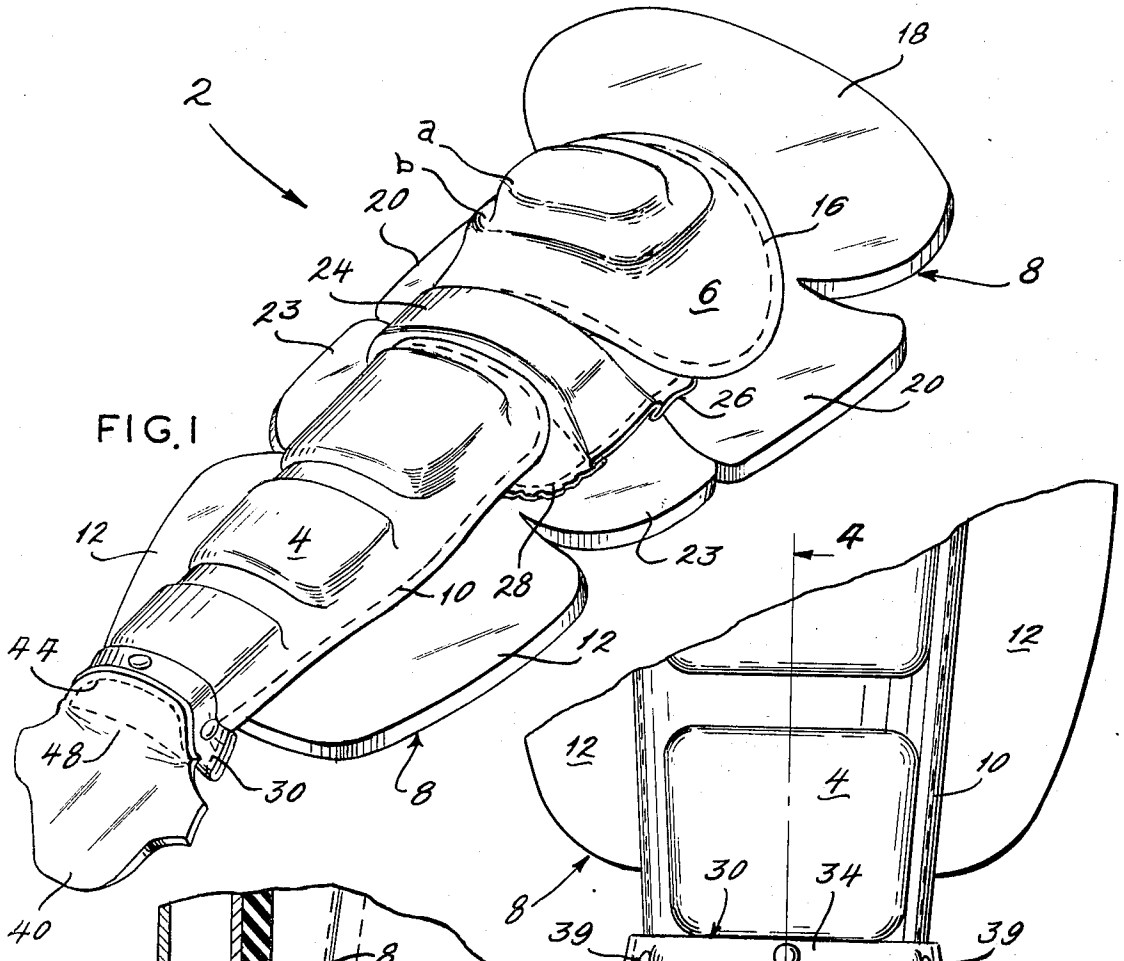


FIG. 1

FIG. 2

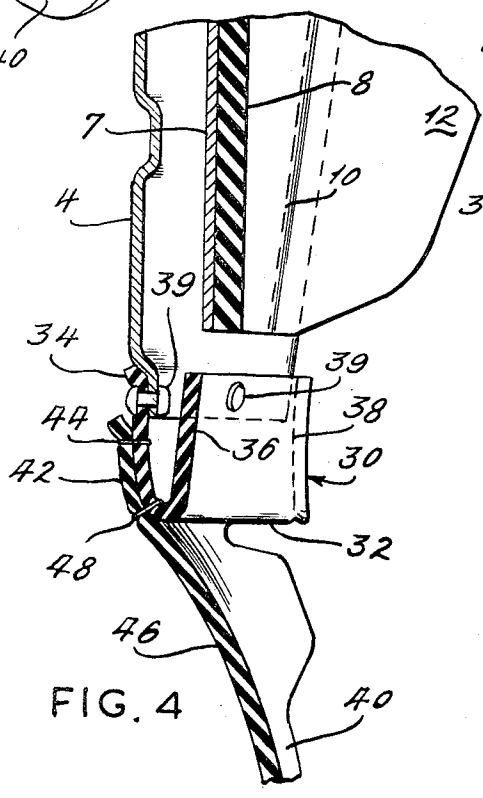


FIG. 4

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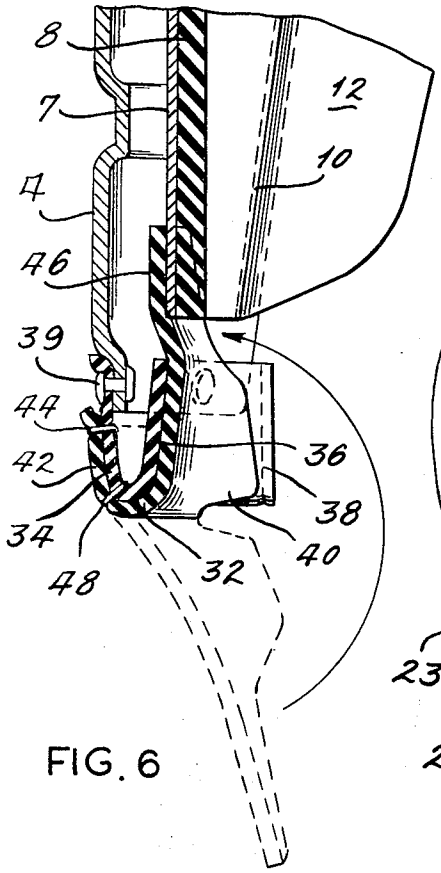


FIG. 6

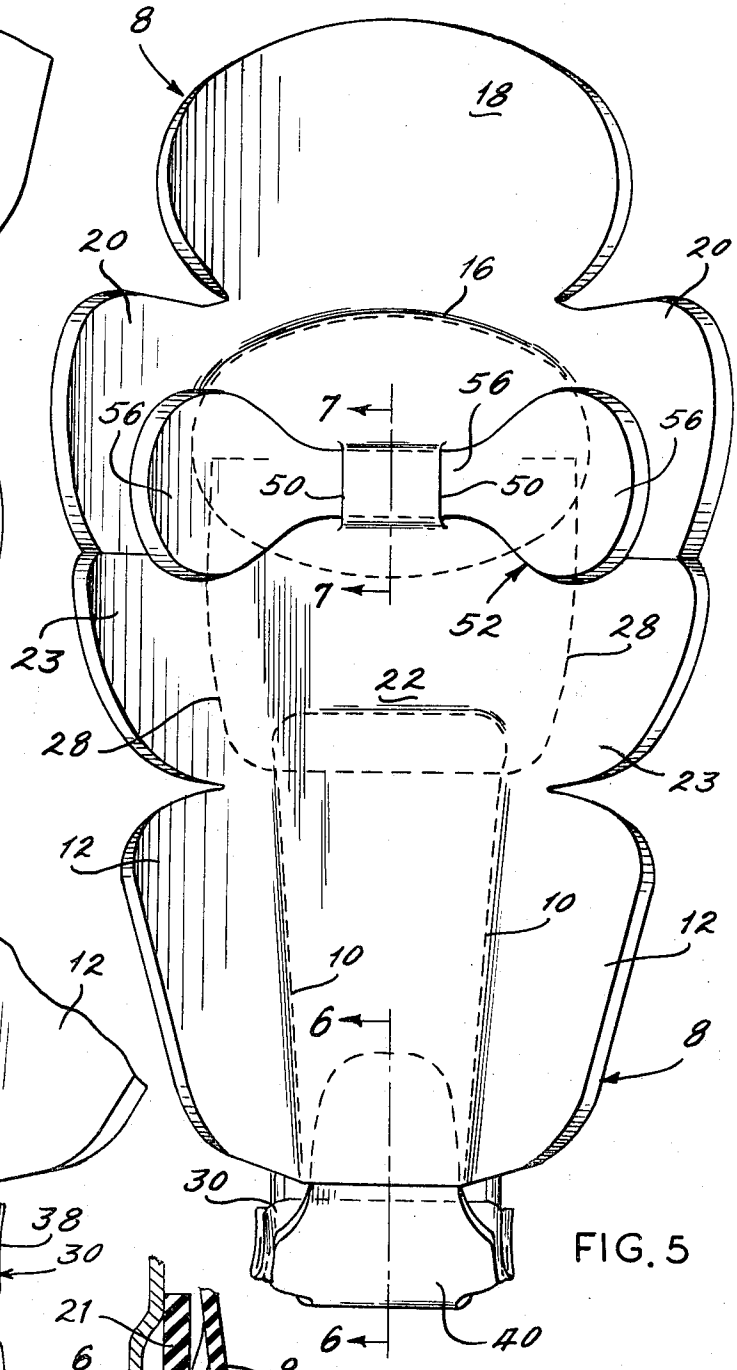


FIG. 5

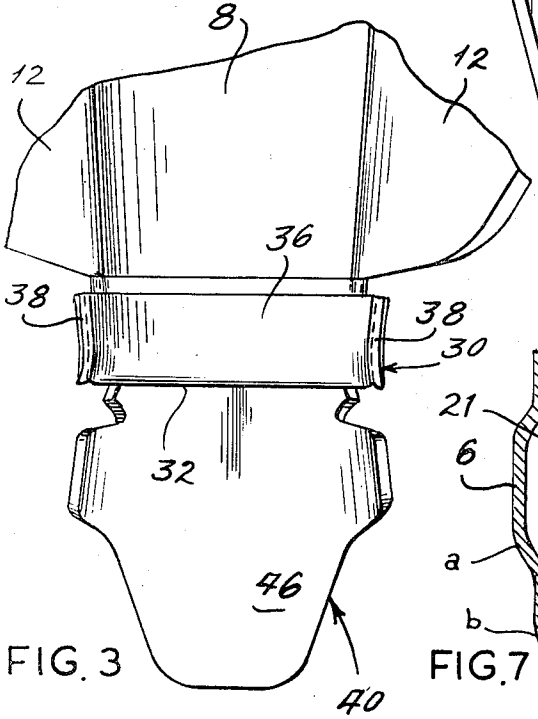


FIG. 3

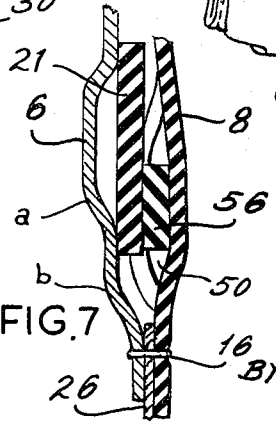


FIG. 7

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LEG GUARD

BACKGROUND OF THE INVENTION

This invention relates in general to athletic protective equipment and more particularly to leg guards for athletic contests.

It is common practice to protect the legs, and particularly the shins of the athletes such as ice hockey players with leg guards which extend from the vicinity of the knees to the ankles. These leg guards are normally held in place merely by the heavy knit stockings worn over them, and since ice hockey is a rigorous sport involving considerable body contact, the leg guards tend to shift out of place. Consequently, hockey players are constantly adjusting their leg guards. Moreover, leg guards of current design do not provide protection for the player's insteps, which in ice hockey are often struck by opposing player sticks. Also, leg guards of current design do not provide any additional protection for the vulnerable fibro cartilage and anterior ligament of the knee. If these are injured the hockey player may be disabled for weeks.

SUMMARY OF THE INVENTION

One of the principal objects of the present invention is to provide a leg guard which is comfortable and allows the wearer sufficient freedom of movement to participate in rigorous athletic contests such as ice hockey. Another object is to provide a leg guard which remains in place, even during rigorous athletic contests involving considerable body contact. A further object is to provide a leg guard which is light in weight, simple in construction, and easy to manufacture. An additional object is to provide a leg guard which provides protection for the player's instep. Still another object is to provide a leg guard which affords adequate protection for the vulnerable fibro cartilage of the knee. These and other objects and advantages will become apparent hereinafter.

The present invention is embodied in a leg guard having a relatively rigid shin piece and a flexible end flap at the lower end of the shin piece. The flap is connected with the shin piece in such a manner that it may either be folded into the interior of the leg guard or else extended as a continuation of the shin piece. The invention also resides in a leg guard having auxiliary padding along the front and sides of the knee to provide additional padding for the fibro cartilage and anterior ligament of the knee. The invention also consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

DESCRIPTION OF THE DRAWINGS

In the accompanying drawings which form part of the specification and wherein like numerals refer to like parts wherever they occur:

FIG. 1 is a perspective view of a leg guard constructed in accordance with and embodying the present invention;

FIG. 2 is a front elevational view of the lower end of the leg guard showing the end flap extended;

FIG. 3 is a rear elevational view of the leg guard with the lower end flap extended;

FIG. 4 is a sectional view taken along line 4—4 of FIG. 2.

FIG. 5 is a rear elevational view of the leg guard showing the lower end flap folded inwardly; and

FIGS. 6 and 7 are sectional views taken along line 6—6 and 7—7, respectively, of FIG. 5.

DETAILED DESCRIPTION

Referring now to the drawings, 2 designates a leg guard including (FIG. 1) a curved thin piece 4 and a cup-shaped knee cap 6, both of which are molded or otherwise formed from a relatively rigid plastic material such as polyethelene. Preferably the polyethelene has multitudes of minute air cells blown into it to improve its flexibility and its shock absorbing characteristics. Such a polyethelene material is available from the Rawlings Sporting Goods Company of St. Louis, and is marketed by them under the trademarks ARMOR-FLEX. The shin piece 4 is shaped to wrap around and generally conform to the contour of the user's shin. The knee cap 6 is contoured to form a pocket for the knee, and has a pair of corrugations *a* and *b* at the center thereof. The corrugation *a* is actually surrounded by the corrugation *b*, and the two in combination impart a stepped configuration to the forward surface of the knee cap 6. Since the thickness of the knee cap 6 does not change through the corrugations *a* and *b*, the corrugations a and b create a stepped pocket on the opposite side of the knee cap, that is the side presented toward the user's knee. The corrugations *a* and *b* protect the patella and the patellor ligaments from impacts so that they are not so easily injured.

Disposed behind the shin piece 4 is a backing piece 7 (FIG. 4) which in turn is backed by a padding material 8. The backing piece 7 is for the most part spaced from the shin piece 4, but the two abut adjacent to the side margins of the shin piece 4 where the shin piece 4, the backing piece 7, and the padding material 8 are all secured together by a run of stitching 10 which follows but is set slightly inwardly from the peripheral margin of the shin piece 4. The padding material 8 and backing piece 7 are further connected by an adhesive. The padding material 8 continues beyond the side margins of the shin piece 4 in the formation of side flaps 12, but the lower margin of the padding material 8 terminates prior to the curved lower margin of the shin piece 4 and the run of stitching 10 does not extend along that margin.

The knee cap 6 is likewise attached to the padding material 8, being secured thereto by a run of stitching 16 which extends completely around the knee cap adjacent to its peripheral margin. The padding material 8 furthermore extends entirely across the inner face of the knee cap 6 and continues outwardly beyond its upper and side edges in the provision of an upper flap 18 and side flaps 20. At its center the knee cap 4 is embossed outwardly slightly due to the presence of the corrugations a and b therein and contained within the pocket formed on the opposite side of this embossment is an additional pad 21 (FIG. 7) which is held in place by an adhesive.

The portion of the padding material 8 which extends between the shin piece 4 and the knee cap 6 constitutes a connecting segment 22, and the connecting segment 22 has side flaps 23 extending from it, those side flaps being interposed between the side flaps 12 extending from the shin piece 4 and the side flaps 20 which project beyond the knee cap 6.

The padding material 8 is quite flexible and is preferably formed from a foamed plastic composition such as polyvinyl chloride.

The connecting segment 22 is further protected by an additional layer of armor 24 (FIG. 1) which is disposed between the upper margin of the shin piece 4 and the lower margin of the knee cap 6, and that armor includes a plastic strip and padding encased in a leather covering 26. The covering 26 extends upwardly and downwardly from the armor 24 and is captured in the runs of stitching 10 and 16. The side edges of the leather covering 26 are further attached to the connecting segment 22 of the padding material 8 along runs of stitching 28.

The lower edge of the shin piece 4 is completely covered by a thin piece of leather covered padding 30 (FIGS. 2–4) which is folded over upon itself along a fold line 32 in the formation of front and rear segments 34 and 36, and those segments are stitched together along their sides by runs of stitching 38 so as to form a pocket into which the lower end of the shin piece 4 is fitted. The leather cover on the folded padding 30 is presented away from the underlying shin piece 4, and the padding 30 is secured to the shin piece 4 by a center rivet 39 which passes through only the front segment 34 and the lower end of the shin piece 4 and by a pair of end rivets 39 which pass through both the segments 34 and 36 and are set slightly inwardly from the side margins of the shin piece 4. The lower margin of the padding 30 is of course the fold line 32 and it is located below the lower margin of the shin piece 4.

The padding 30 has a lower end flap 40 connected to it such that the flap 40 may either be extended beyond the padding 30 without doubling back upon itself (FIGS. 2–4) or else folded backwardly across the fold line 32 into the interior or the leg guard 2 (FIGS. 5 and 6). In particular, the flap 40, like the padding 30, is formed from leather covered padding material with the leather covering presented forwardly. It includes an attaching portion 42 (FIGS. 2 and 4) having an arcuate upper edge and that portion is secured to the outer segment 34 of the folded padding 30 along an arcuate run of stitching 44 which is located slightly inwardly from that arcuate upper margin. At the end of the run of stitching 44 the side margin of the lower flap 40 flares outwardly and thereafter turns back inwardly so as to form a tongue 46. The flap 40 at the juncture of its attaching portion and tongue 46 is also connected to the folded padding 30 along another run of stitching 48 which passes through the padding 30 at the fold line 32 therein. The run of stitching 48 is substantially straight and is located slightly to the forward side of the fold line 32.

Finally, the portion of the padding material 8 which is located behind the knee cap 6 is provided with a pair of parallel slits 50 (FIGS. 5 and 7) which extend vertically and are disposed closer to the lower portion of the run of stitching 16 than to the upper portion of that run. The slits 50 retain an auxiliary pad 52 which consists of generally circular end portions 54 which are connected by a narrow connecting portion 56. The connecting portion 56 is extended through the slits 50 with most of it presented between the padding and the knee cap 6, while the generally circular end portions 54 are presented along the inside or rear faces of the side flaps 20. In this connection, it should be noted that the end portions 54 are located generally at the bottom of the knee cap 6 so that when the leg guard 2 is fitted to the user's leg the end portions 54 will be disposed generally to the side of the knee joint. The auxiliary pad 52 is formed from the same type of padding material as the padding 8, but it is slightly thicker. Preferably, the auxiliary pad 52 is inserted through the slits 50 before the padding material 8 is stitched to the knee cap 6 along the run of stitching 16.

In use the leg guard 2 is placed against the player's leg with the knee cap 6 in front of his knee and the shin piece 4 in front of his shin. The side flaps 12, 20 and 23 will accordingly extend along the sides of the player's leg, while the generally circular end portions 54 of the auxiliary pad 52 will be located to the sides of the knee joint in the leg. After the leg guard is so emplaced, the player pulls a heavy knit stocking over the entire leg guard 2 to hold it in the previously described position.

The player has an option as to the dispostion of the lower flap 40 in use. First he may fold it into the interior of the leg guard 2 and tuck its free end between the backing piece 7 and the shin piece 4 (FIGS. 5 and 6), in which case it will fold across the fold line 32 and overlie the rear segment 36 of the padding 30 as well as the lower end of the padding material 8. In that position the flap 40 affords extra protection for the lower portion of the player's shin. In the alternative, the player may allow the flap 40 to extend beyond the fold line 32 as a flexible continuation of the shin piece 4 (FIGS. 2–4). In that case, the flap 40 can and should be tucked into the upper portion of the player's skate. When fitted into the player's skate, the flap 40 secures the entire lower end of the leg guard 2 and prevents it from shifting out of position, even during vigorous skating or checking as is often encountered in ice hockey matches. The flap 40 also provides additional protection for the player's instep when tucked into the skate.

Since the flap 40 is stitched to only the front segment 34 and fold line 32 of the folded padding 30, and not to the rear segment 36, the flap 40 may be extended without doubling back upon itself and thereby creating an uncomfortable ridge or protrusion behind the rear segment 36 as is true in leg guards of current manufacture. Nevertheless, the flap 40 may still be folded inwardly to provide additional padding at the lower interior end of the shin piece 4.

Inasmuch as the generally circular end portions 54 of the auxiliary pad 52 are positioned at the side of the knee joint in the leg, they provide additional padding for the fibro cartilage and they help protect the medial collateral ligaments of the knee, both of which are quite vulnerable from the sides of the knee joint. This is a very important area for protection, since an injury to the fibro cartilage or medial collateral ligaments could disable a hockey player for weeks.

This invention is intended to cover all changes and modifications of the example of the invention herein chosen for purposes of the disclosure which do not constitute departures from the spirit and scope of the invention.

What is claimed is:

1. A leg guard comprising: a relatively rigid shin piece which is contoured to protect the wearer's shin; a padding material attached to the shin piece and disposed behind it so that the padding material is presented toward the wearer's shin; flexible padding attached to the shin piece and having connected front and rear segments between which the lower end of the shin piece fits; and a flexible end flap connected to the front segment of the flexible padding at the lower end of the shin piece but not to the rear segment; the flap

being further connected in such a manner that the flap can be moved between an inwardly folded position wherein the flap extends upwardly beyond the lower margin of the shin piece and overlies that face of the shin piece normally presented toward the wearer's shin and a position extended from the lower end of the shin piece wherein the flap extends generally downwardly from the shin piece as a continuation thereof and without doubling back upon itself.

2. A leg guard according to claim 1 wherein the front and rear segments of the flexible padding are formed integral to one another and are connected through a fold in the padding.

3. A leg guard according to claim 2 wherein the flap is further connected to the padding adjacent to the fold in the padding.

4. A leg guard according to claim 3 wherein the flap is connected to the front segment of the padding by a run of stitching and to the fold of the padding by another run of stitching.

5. A leg guard according to claim 2 wherein the sides of the front and rear segments are stitched to one another and the front and rear segments are attached to the shin piece by rivets located near the side margins of the shin piece.

6. A leg guard according to claim 4 wherein the flap is formed from a padding material.

7. A leg guard comprising: a relatively rigid shin piece contoured to protect the shin; a relatively rigid knee cap located above the shin piece to protect the wearer's knee; a padding material located behind the shin piece and knee cap and having a pair of laterally spaced slits therein; and auxiliary padding along the padding material at the knee cap and extended through the slits therein, the auxiliary padding being positioned at the sides of the wearer's knee joint when the leg guard is worn for providing additional protection in that area.

8. A leg guard according to claim 7 wherein the padding material attached to the knee cap has flaps which project generally laterally beyond the sides of the knee cap; and wherein the auxiliary padding is presented along the inside faces of those flaps to prevent the two condyles of the wearer's knee from opening.

9. A leg guard according to claim 7 wherein the padding material attached to the knee cap has flaps which project beyond the sides of the knee cap; wherein the pair of laterally spaced slits are disposed behind the knee cap; and wherein the auxiliary padding comprises a pair of enlarged end portions presented along the inside faces of the flaps and a reduced connecting portion interconnecting the end portions and extending through the slits, whereby the auxiliary padding is retained in place on the padding means.

10. A leg guard comprising: a relatively rigid shin piece contoured to extend over and protect the wearer's shin; padding attached to the shin piece and extending over the back face thereof so as to be interposed between the wearer's shin and the shin piece; attaching means secured to the shin piece at the lower end thereof; and an end flap connected to the shin piece by the attaching means such that it can be moved between inwardly folded and downwardly extended positions, the end flap being doubled back upon itself and extended over the back face of the shin piece when in its inwardly folded position so as to provide additional protection for the wearer's shin, the end flap being extended downwardly from the lower end of the shin piece without doubling back upon itself when in the downwardly extended positions so as to overlie the wearer's instep and provide additional protection therefor, the end flap beyond the attaching means being nonrigidified and further being flexible both transversely and longitudally so that it can conform to the general contour of the back face of the shin piece and to the contour of the wearer's instep.

11. A leg guard according to claim 10 wherein the lower edge of the padding is above the lower edge of the shin piece; and wherein the end flap when in its inwardly folded position extends above the lower edge of the padding so that the end flap can be tucked in between the padding and the shin piece.

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