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(54) **POSTERIOR KNEE GUARD**

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(71) Applicant: **Brij Mohan Singh**, Ann Arbor, MI
(US)

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(72) Inventor: **Brij Mohan Singh**, Ann Arbor, MI
(US)

(57) **ABSTRACT**

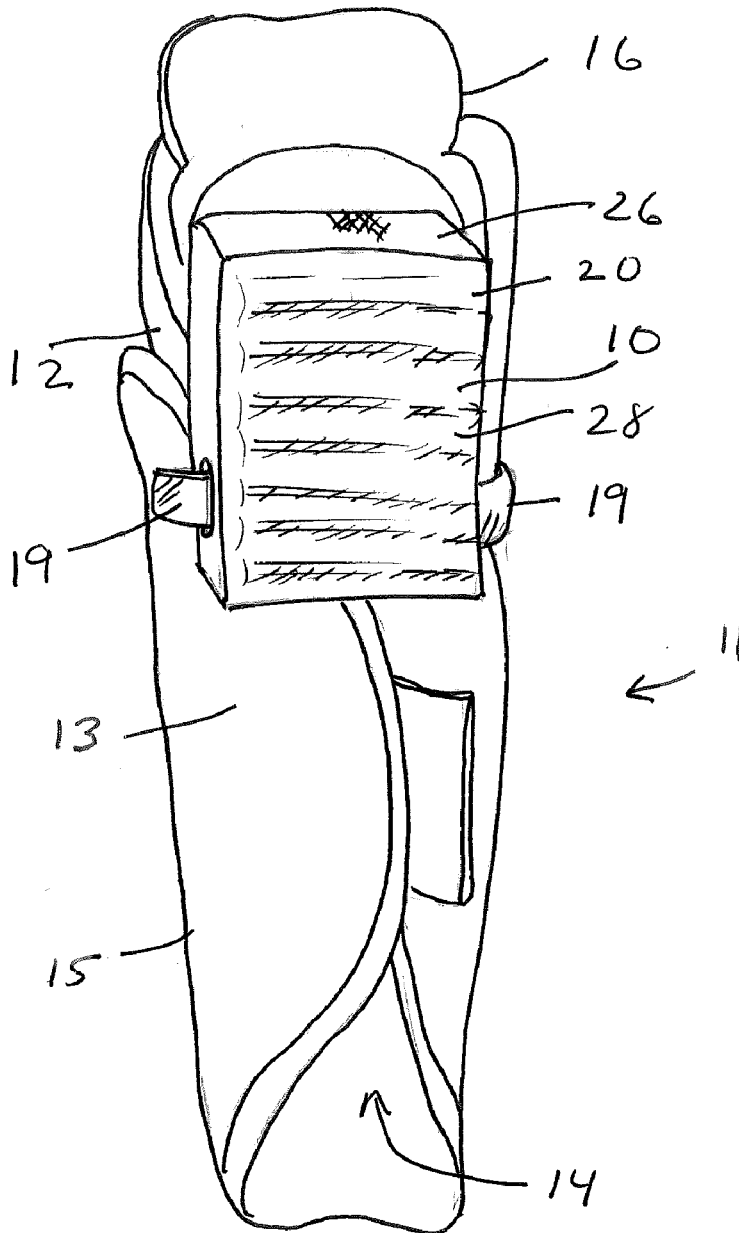
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A posterior knee guard is coupled to a shin guard which includes a front shell, padding, and an elastic mounting strap. The posterior knee guard includes a hard outer layer and an resilient inner pad. The inner pad has a strap channel extending laterally therethrough which is configured to receive the mounting strap of the shin guard. The outer layer may be overlaid with a strong covering material. The outer layer has a vertical column of horizontally extending guard strips. The guard strips are separated from each other to form a space between adjacent guard strips.

Publication Classification

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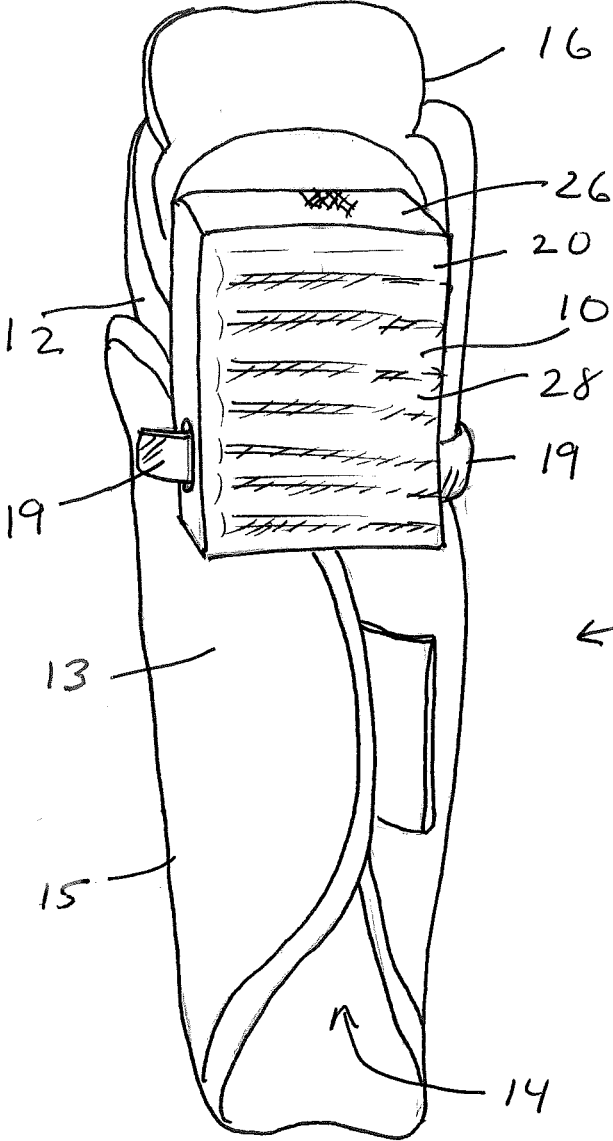


FIG. 1

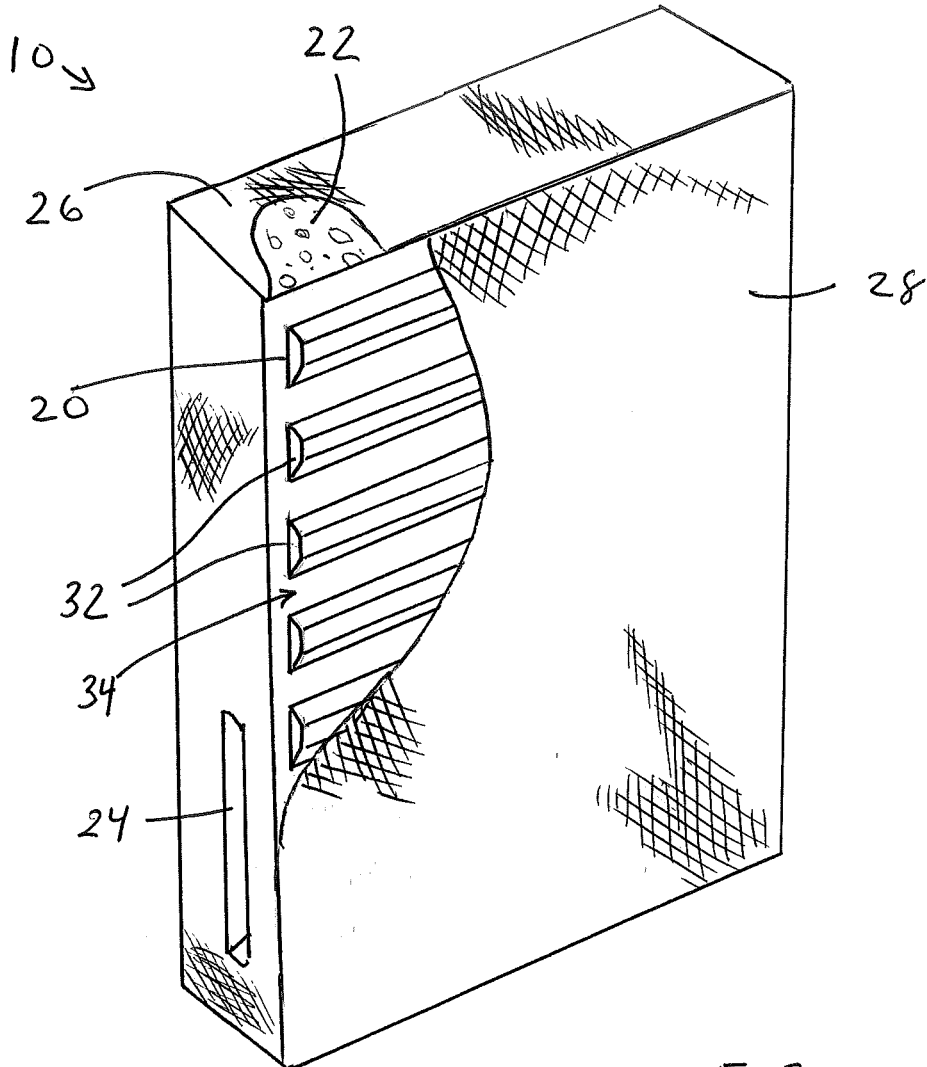


FIG. 2

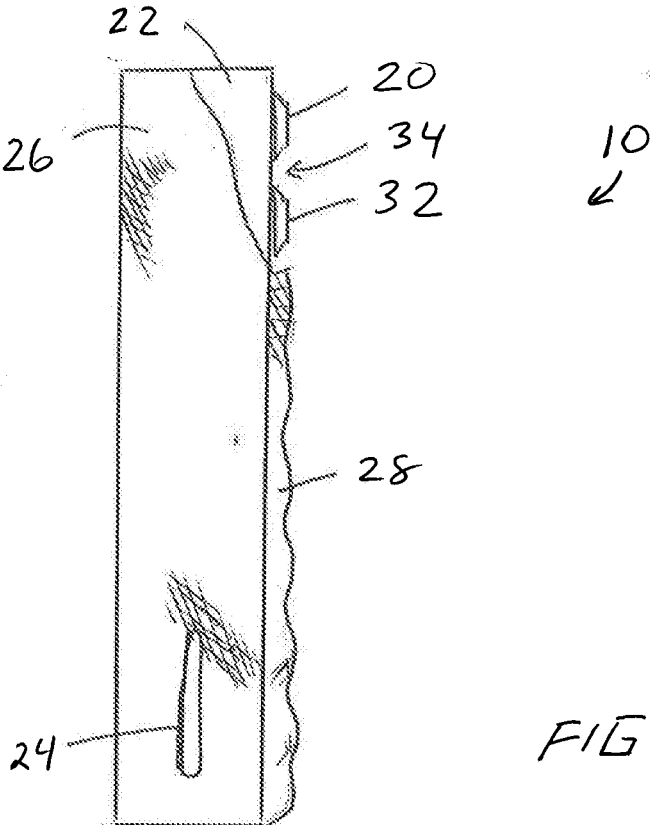


FIG. 3

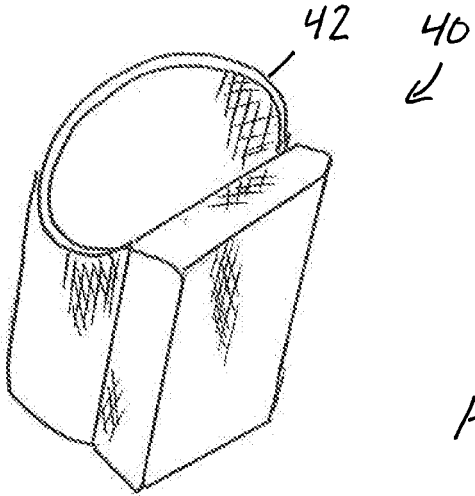


FIG. 4

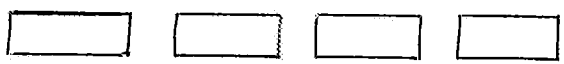


FIG. 5

POSTERIOR KNEE GUARD

TECHNICAL FIELD

[0001] This invention relates generally to a protector and more specifically to a protector or guard for the posterior of the knee of a person.

BACKGROUND OF THE INVENTION

[0002] In today's sports, a player oftentimes wears pads or guards to protect themselves from harm. These guards may include shoulder pads, knee pads, elbow pads, shin pads, or the like.

[0003] A common guard used in sports, and especially hockey, is the shin guard, which overlays the shin portion of a player's leg. These shin guards include a hard outer shell and a layer of padding positioned between the outer shell and the player's leg. These shin guards may include a portion which overlays the front or anterior portion of a player's knee.

[0004] While the shin guard provides protection to the anterior portion of a player's leg, it does not provide protection to the posterior portion of a player's leg, as a hard shell in this area would impede the normal pivoting or bending of the player's knee. Thus, the posterior portion of a player's leg, or specifically the popliteal fossa area, is susceptible to injury from contact by a hockey stick or the blade of an hockey skate, as this area is not protected by conventional hockey equipment. Therefore, this is a known point of weakness that is often exploited by hockey players.

[0005] Accordingly, it is seen that a need remains for a guard to protect the posterior of a person's knee, that remains in place, and does not interfere with the movement of the knee. It is to the provision of such therefore that the present invention is primarily directed.

SUMMARY OF THE INVENTION

[0006] In a preferred form of the invention a posterior knee guard for protecting the popliteal fossa area of a wearer comprises a resilient inner pad, an outer shell having a vertical column of horizontal guard strips, wherein each strip is spaced from an adjacent strip, and a flexible covering overlaying said outer shell.

[0007] In another preferred form of the invention a combination posterior knee guard and shin guard comprises a shin guard having a lower leg portion and a kneecap portion and a posterior knee guard coupled to the shin guard. The shin guard has a flexible mounting strap. The posterior knee guard has a resilient inner pad, and an outer shell coupled to the inner pad. The posterior knee guard is coupled to the shin guard through the flexible mounting strap being coupled to the posterior knee guard.

BRIEF DESCRIPTION OF THE DRAWING

[0008] FIG. 1 is a perspective view of a posterior knee guard in a preferred form of the invention, shown coupled to a conventional shin guard.

[0009] FIG. 2 is a perspective view of the posterior knee guard of FIG. 1.

[0010] FIG. 3 is a cross-sectional side view of the posterior knee guard of FIG. 1.

[0011] FIG. 4 is a posterior knee guard in another preferred form of the invention.

[0012] FIG. 5 is a front view of a multi-segmented guard strip of the posterior knee guard of FIG. 1.

DETAILED DESCRIPTION

[0013] With reference next to the drawings, there is shown a posterior knee guard 10 in a preferred form of the invention. The posterior knee guard 10 is shown coupled to a conventional shin guard 11 which includes a front shell 12 and rear padding 13 configured to form a recess 14 that is occupied by a person's leg. The shin guard 11 includes a lower leg portion 15 and a kneecap portion 16. The shin guard 11 also includes a flexible, elastic mounting strap 19 which is sized and shaped to extend from one side of the padding 13, wrap about a person's leg below or in the general area of the person's knee, and be coupled to the opposite side of the padding 13.

[0014] The posterior knee guard 10 includes a hard or rigid exterior shell, outer casing, or layer 20 and a resilient interior or inner layer, pad or padding member 22. The inner pad 22 has a strap channel 24 extending laterally there-through which is configured to receive the mounting strap 19 of the conventional shin guard 11, as shown in FIG. 1. The strap channel 24 is located within the lower portion of the inner pad 22. The inner pad 22 may be made of a resilient, low density foam material, such as a cross linked polyurethane material. The inner pad 22 is at least partially overlaid with a mesh or woven knit liner material 26 which aids in providing comfort and wicking perspiration from a person's leg. The outer layer 20 may be overlaid with a strong covering material 28, such as a Poly-paraphenylene terephthalamide layer sold under the trade name Kevlar by E. I. du Pont de Nemours and Company of Wilmington, Del.

[0015] The outer layer 20 has a vertical column or array of horizontally or laterally extending guard strips or elongated members 32. Each guard strip 32 is made of a hard or generally rigid material, such as a high impact plastic. The guard strips 32 are separated from each other to form a space 34 between adjacent guard strips 32. The guard strips 32 are coupled to the inner layer 22 so that the posterior knee pad 10 may be bent and the outer layer 20 articulated without being restricted by the construction of the outer layer or guard strips 32. Here, the inner layer 22 acts as a pivotal joint between adjacent guard strips 32.

[0016] The posterior knee guard 10 is generally rectangular with a dimension of 4 inches in height, 2.75 inches in width, and 0.75 inches in depth. This dimension covers the popliteal fossa region of the knee.

[0017] In use, the posterior knee guard 10 is coupled to a conventional shin guard 11 by passing the shin guard's mounting strap 19 through the strap channel 24 of the inner pad 22 of the posterior knee guard 10.

[0018] The person may then position the shin guard 11 upon his or her leg so that the leg resides within the recess 14 defined by the padding 13 of the shin guard 11. With the shin guard 11 in a normal position upon the person's leg, the posterior knee guard 10 is positioned over the posterior of the knee, specifically the knee guard 10 is positioned to cover the popliteal fossa area of the wearer. The tension of the mounting strap 19 may be varied through its positional mounting.

[0019] As the person bends the knee during normal use, such as running, skating, etc., the outer layer 20 may be bent in a concave manner. The spacing or space 34 between the adjacent guard strips 32 that form the outer layer 20 allow

for such movement. This movement may also be considered to be an articulated movement as the inner pad **22** forms a joint between the adjacent guard strips **32**. The space **34** between adjacent guard strips is small enough so that sports equipment, such as a hockey stick, hockey skate blade, or other equipment, may not pass between adjacent guard strips **32** and injure a person. The covering material **28** also protects the player, prevents separation of the guard strips due to impact, and provides a covering to resist tearing of the soft inner pad **22**.

[0020] With reference next to FIG. 4, there is shown a posterior knee guard **40** in another form. Here, the posterior knee guard **40** is essentially the same as that previously described except that the posterior knee guard **40** includes its own mounting strap **42** so that the posterior knee guard **40** need not be directly coupled to the shin guard.

[0021] The mounting strap **42** may be an elastic tubular sleeve or two elastic portions joined together through a fastener, such as hook and loop fasteners. The strap **42** may also be two straps so that one strap may be wrapped above the knee cap and another strap be wrapped below the knee cap.

[0022] It should be understood that while the elongated guard strip **32** is shown as a single strip, they may be comprised of multiple segments to provide more flexibility, as shown in FIG. 5. As such, the guard strips **32** would form multiple vertical columns or a matrix of guard strips.

[0023] It thus is seen that a posterior knee guard is now provided that allows for comfort while protecting the posterior portion of a person's knee. Although the posterior knee guard has been illustrated and described in its preferred form, it should be understood that many modifications, additions and deletions may be made to that specific form without departure from the spirit and scope of the invention as set forth in the following claims.

1. A posterior knee guard for protecting the popliteal fossa area of a wearer, the posterior knee guard comprising:

- a resilient inner pad;
- an outer shell having a vertical column of horizontal guard strips, each said strip being spaced from an adjacent said strip, and
- a flexible covering overlaying said outer shell.

2. The posterior knee guard of claim 1 wherein said guard strips are mounted to said inner pad,

whereby the inner pad acts as a joint between adjacent guard strips for articulated movement of the outer shell.

3. The posterior knee guard of claim 1 wherein said resilient inner pad has a laterally extending strap channel therethrough,

whereby the strap channel may receive the mounting strap of a conventional shin guard.

4. The posterior knee guard of claim 1 wherein said resilient inner pad is at least partially overlaid with a liner material.

5. The posterior knee guard of claim 1 further comprising a mounting strap coupled to said inner pad.

6. The posterior knee guard of claim 1 wherein said horizontal guard strips include multiple segments.

7. A posterior knee guard for protecting the posterior of a wearer's knee, the posterior knee guard comprising:

- a flexible inner pad;
- a hard outer shell coupled to said inner pad, said outer shell having a plurality of elongated members coupled to each other for articulated movement of said outer shell.

8. The posterior knee guard of claim 7 further comprising a flexible covering overlaying said outer shell.

9. The posterior knee guard of claim 7 wherein said guard strips are coupled to each other by mounting each elongated member to said inner pad to create a space between each adjacent elongated member.

10. The posterior knee guard of claim 7 wherein said inner pad has a laterally extending strap channel therethrough.

11. The posterior knee guard of claim 7 wherein said inner pad is at least partially overlaid with a liner material.

12. The posterior knee guard of claim 7 further comprising a mounting strap coupled to said inner pad.

13. The posterior knee guard of claim 7 wherein said elongated members include multiple segments.

14. A combination posterior knee guard and shin guard comprising,

- a shin guard having a lower leg portion and a kneecap portion, the shin guard also having a flexible mounting strap;

a posterior knee guard coupled to said shin guard, said posterior knee guard having a resilient inner pad, and an outer shell coupled to said inner pad, said posterior knee guard being coupled to said shin guard through said flexible mounting strap being coupled to said posterior knee guard.

15. The combination posterior knee guard and shin guard of claim 14 wherein said outer shell includes a plurality of horizontal guard strips.

16. The combination posterior knee guard and shin guard of claim 14 wherein said vertical column of horizontal guard strips includes a space between each adjacent guard strip, and wherein each guard strip is coupled to said inner pad.

17. The combination posterior knee guard and shin guard of claim 14 further comprising a flexible covering overlaying said outer shell.

18. The combination posterior knee guard and shin guard of claim 14 wherein said inner pad has a laterally extending strap channel therethrough and said mounting strap of said shin guard extends through said strap channel.

19. The combination posterior knee guard and shin guard of claim 14 wherein said inner pad is at least partially overlaid with a liner material.

20. The combination posterior knee guard and shin guard of claim 15 wherein said horizontal guard strips include multiple segments.

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