(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 487 289 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
13.05.2009 Bulletin 2009/20

(21) Application number: **03708968.7**

(22) Date of filing: **05.02.2003**

(51) Int Cl.:
A63B 71/14 *(2006.01)* ***A41D 19/00*** *(2006.01)*

(86) International application number:
PCT/US2003/003327

(87) International publication number:
WO 2003/071888 (04.09.2003 Gazette 2003/36)

(54) **SOCCER GOALKEEPER GLOVE**

FUSSBALLTORWARTHANDSCHUH

GANT POUR GARDIEN DE BUT DE FOOTBALL

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT SE SI SK TR

(30) Priority: **21.02.2002 US 358607 P**
18.09.2002 US 245919

(43) Date of publication of application:
22.12.2004 Bulletin 2004/52

(73) Proprietor: **Lucas, Alfred W. Jr.**
Honeoye Falls, NY 14472 (US)

(72) Inventor: **Lucas, Alfred W. Jr.**
Honeoye Falls, NY 14472 (US)

(74) Representative: **Molnia, David**
df-mp
Fünf Höfe
Theatinerstrasse 16
80333 München (DE)

(56) References cited:
GB-A- 2 281 020
US-A- 1 726 728
US-A- 1 746 268
US-A- 3 333 850
US-A- 3 880 426
US-A- 3 938 207
US-A- 3 944 220
US-A- 4 295 229
US-A- 4 669 991
US-A- 5 608 912
US-A- 6 088 835
US-B2- 6 543 058

EP 1 487 289 B1

Description

Related Applications

[0001] This application claims the benefit of U. S. Provisional Application No. 60/358,607, filed on 2 February 2002, entitled Soccer Goalkeeper Glove, Alfred F. Lucas Jr., inventor, which provisional application is incorporated by reference herein,

Technical Field

[0002] Gloves worn by soccer goalkeepers. (In most of the world the sport known in the US as "soccer" is called "football".)

Background

[0003] Soccer goalkeepers typically wear gloves, which offer some padding to protect hands from the impact of balls traveling at high velocity. Gloves for soccer keepers have to allow normal hand movements and finger sensitivity, because the gloved hands of the goalkeeper are also used for throwing the ball, punching the ball, and carrying the ball. Gloves such as worn by baseball players and ice hockey goalies would not work for soccer keepers, who must preserve the feel of their hands on the ball to accomplish not only catching, but carrying, throwing, and punching the ball.

[0004] Injured fingers are a special hazard faced by soccer goalkeepers. In their efforts to catch or deflect balls traveling toward them at high velocity; it frequently happens that a ball will hit a goalkeeper's hand in such a way as to bend fingers backward. The ordinary gloves that soccer keepers wear do not prevent this, and although some gloves have recently been aimed at better finger protection for soccer keepers, such gloves have not satisfactorily met the requirements for both protecting fingers and preserving freedom of movement and feel for the ball.

[0005] The U.S. Patent No. 3,333,850 is considered to represent the relevant state of the art. This patent discloses a bowling glove by means of which the entire weight of a bowling ball may be suspended from a bowler's wrist. This is accomplished by pins which engage the bowling ball in place of the conventional finger grip in finger holes. The bowling glove is not provided with a thumb. Each of the bowling glove's four fingers comprises a pin which is connected directly to the bowler's wrist by means of a strap crossing over the bowler's palm. The four straps are connected to a wrist band adapted to encircle the bowler's wrist. The length of each strap may be independently adjusted to hold the fingers in a slightly curved position approximating the contour of the outer surface of the bowling ball.

[0006] The U.S. Patent No. 3,880,426 discloses a wrist and finger support for bowlers that has a similar arrangement as the glove of the claimed invention, but only restricts the movement of the middle part of two fingers.

Summary

[0007] The above mentioned problems are solved by the glove of claim 1.

[0008] The invention of this application aims at a soccer goalkeeper glove that provides substantial protection against thumb or fingers bending backward, while still affording all the ball handling feel necessary for optimum performance. In accomplishing this, the invention recognizes several ways that tension resistant or stretch resistant material can be arranged over the palm face of gloves for soccer goalkeepers in a way that strongly resists back bending of the thumb or fingers wearing the glove. The invention also enhances this back bending protection by providing webbing or inter connections between thumb and fingers of the glove so that adjacent fingers can help resist any back bending force from ball impact on one of the fingers. The invention also arranges these expedients in a way that does not impair the glove wearer's sense of ball feel or reduce the wearer's performance in catching, carrying, throwing, and punching the soccer ball.

Drawings

[0009]

Figure 1 is a front elevational view of a left-hand specimen of a preferred embodiment of the inventive soccer goalkeeper glove.

Figure 2 is a side elevational view of the glove of Figure 1.

Figure 3 is a partially schematic side view of a glove such as shown in Figures 1 and 2 positioned for receiving a surface coating.

Figure 4 is a schematic diagram illustrating mechanics of a laminate-like finger bracing action accomplished by the inventive glove.

Figure 5 is a rear elevational view of the glove of Figures 1 and 2.

Figure 6 is a partially schematic front elevational view of a left-hand specimen of an alternative embodiment of the inventive glove.

Figure 7 is a schematic cross sectional view of layers involved in a bracing laminate used in the inventive glove.

Figure 8 is a variation of the glove of Figures 1 and 2 showing wrapped around rear face protection for the thumb and little finger of the glove.

Figure 9 is a partially schematic front elevational view of a left-handed specimen of another alternative embodiment of the inventive glove emphasizing triangulation of the protective strands.

Figure 10 is a partially schematic front elevational view of a left-handed specimen of a palm face of the inventive glove showing approximate locations of tendon lines for the thumb and fingers of the glove.

Figure 11 is a partially schematic palm face view of a left-handed specimen of a variation of the inventive glove showing strand mesh bonding lines extending along tendon lines for the thumb and fingers of the glove.

Detailed Description

[0010] A preferred embodiment of a left handed glove 10 shown in Figures 1, 2, and 5 illustrates one of the many ways that a flexible and stretch resistant strand material 20 can be arranged over a palm face of a glove to resist back bending of gloved thumb or fingers upon impact with a soccer ball. The theory of operation of glove 10 is that flexible strand material 20, while secured to a face or palm side of glove 10 can allow gloved fingers freedom of movement and adequate ball handling feel while being substantially non-stretchable so as to resist back bending of the gloved thumb or fingers.

[0011] Such back bending resistance is accomplished in two ways. First, the flexible material preferably interconnects thumb and fingers of glove 10 as illustrated so that each finger can help supply resistance to back bending stress on an adjacent finger. Second, material 20 being bonded to and extending over a palm face of glove 10 forms a strand laminate secured to a palm face surface of glove 10 so that back bending of a finger forces material 20 into a stretched or elongated curve that material 20 resists by being substantially non-stretchable. An analogy is a multi-layered laminate formed in a curve or a plane and resistant to bending into a different shape. Any such bending requires a laminate that will form an outer layer on a bent curve to be stretched to allow the bending. If the laminate is non-stretchable, it can highly resist any such bending.

[0012] Material 20 can be incorporated into a laminate forming a palm face of glove 10 so that it is not visible or is visible only in gaps between fingers and thumb. On the other hand, material 20 can also be attached or secured to a palm face of glove 10 without necessarily being laminated fully to the palm face of the glove. Material 20 is preferably secured to the palm face of glove 10 at a plurality of regions of the palm face of glove 10 so that its stretch resistance can be deployed to resist injury from back bending of a thumb or finger within the glove.

[0013] The stretch resistant laminate principle is schematically illustrated in Figure 4. Lines 11 schematically represent finger bones connected at joints 12, and closely stroked line 13 represents a non-stretchable glove laminate extending from an anchor point 14 on a back side of a finger to an anchor point 15 at a wrist region of a glove. The strand or mesh material represented by stroked line 13 is preferably bonded to a palm face of a glove to be disposed on a palm side of a finger as illustrated. If finger bones 11 are forced backward toward the positions of broken lines 11, then the strand mesh, or screen material is forced to stretch along widely stroked line 13. A non-stretchable material will strongly resist extension along widely stroked line 13, and will thus resist back bending of fingers.

[0014] Several working prototypes of glove 10 have been successfully demonstrated using nylon screening for flexible and non-stretchable material 20. A wide variety of screenings materials exist, and screens can be made of various polymer materials that may be satisfactorily flexible and stretch resistant. Screen, mesh, or strand material need not be polymeric, so long as it is sufficiently flexible, durable, and stretch resistant. Preferred screening has strands attached to each other at crossing points and is lightweight and cost effective. It also must be flexible and durable enough to survive countless flexures during hand movements required in play. Mesh dimensions of screening or netting 20 do not appear to be critical, and readily available mesh dimensions appear to be satisfactory.

[0015] Besides screening material having a regular crosshatched pattern, strand or mesh material specifically configured to provide tension and stress resistance along desired directions on the palm face of a glove are possible. Such especially preconfigured mesh materials can be expected to be more expensive, but may have sufficient advantages in terms of light weight, flexibility, and tension and stress resistance in the locations and directions to justify the expense for preventing injury from back bending of a thumb or finger.

[0016] Once a satisfactory flexible and stretch resistant mesh material is selected, it is preferably bonded securely to a palm surface of glove 10 to extend from wrist to fingertips. Mesh 20 also preferably extends between fingers as illustrated so that each finger can help support an adjacent finger via a mesh connection. Mesh 20 can be stitched or tacked to finger and palm regions of glove 10, and adhesives or other bonding measures may also be possible.

[0017] Bonding of strand material to glove 10 is especially important in a wrist region 35 of glove 10 and in fingertip regions 31 of glove 10 so that end regions of a strand or a mesh are securely anchored against stretching. It is also possible and preferred that a strand mesh, or screen material 20 be bonded to a palm face of glove 10 at intermediate regions between wrist 35 and thumb and fingertips 31. A continuous bond or laminate including strand mesh, or screen material can accomplish this.

[0018] As shown in Figures 2 and 5, strand or mesh material 20 preferably wraps over distal ends 31 of glove fingers 10 and is preferably attached to backsides 32 of

glove fingers and thumb. This can be done by folding an outer perimeter of mesh 20 back on itself so that it wraps over distal ends 31 of the glove fingertips, and mesh 20 can be bonded to itself in regions spanning spaces between glove fingers and thumb. Wrapping mesh 20 over distal finger ends 31 and securing mesh 20 to back surfaces 32 of the glove fingers is preferred for providing a secure anchorage of the mesh material at the glove fingertips and for strengthening the mesh periphery between fingers.

[0019] At a wrist 35 of glove 10, as shown in Figure 1, mesh 20 is preferably bonded to a wrist strap 36 that is preferably fastened with a hook and loop pile fastener or other fastener such as buckle, or snap. Holding mesh 20 securely at a wrist anchorage of glove 10 is preferred for insuring that mesh 20 is required to stretch before allowing back bending of glove fingers.

[0020] A secure anchorage for strands, mesh, or screen material 20 at wrist region 35 ensures that the stretch resistant material cannot slip from the wrist up toward the palm or heel of the hand and shorten the strand distance to the fingertips of the glove. A secure bond at the wrist region thus inhibits any movement of strand or mesh material toward fingertips of the glove.

[0021] Mesh 20 in available forms such as nylon and some other polymers can be too slippery for an effective, secure grip on a soccer ball. To remedy this and to provide a secure and inexpensive interconnection between mesh 20 and the material 19 of glove 10 I prefer a coating 40 as schematically shown in Figure 7. Coating 40 is preferably present on glove 10 of Figures 1, 2, and 5 but is not illustrated in those views because its presence would obscure mesh 20. Coating 40 can also serve as a bonding material securing strand mesh 20 to face of glove 10. Coating 40 need not be co-extensive enough to cover the full palm face of glove 10, but is preferably applied in regions where a frictional grip is necessary or desirable. Glove material 19 can be any suitable fabric or leather material comfortable to the wearer, and coating material 40 is preferably an elastomer or flexible material selected for secure bonding to mesh material 20 and glove material 19. Material 40 is also selected for a high frictional engagement surface suitable for gripping a soccer ball.

[0022] Material 40 can bond mesh 20 to glove material 19 throughout the regions where mesh 20 contacts glove material 19. I prefer this for insuring that the laminate bond between mesh 20 and glove material 19 is co-extensive throughout their engagement and thus made as strong as practically possible. Coating material 40 can also fill the interstices in mesh 20 and can be applied in the regions between glove fingers. This can give glove 10 an improved appearance with a uniformly textured palm face surface. Coating 20 preferably also extends over distal finger ends 31 and into the regions where mesh 20 is bonded to the back surfaces 32 of glove.fingers. Material 40 can also bond mesh 20 to wrist strap 36 for a secure anchorage at wrist region 35.

[0023] Material 40 is preferably at least as flexible as mesh 20 so as to allow free finger movement during soccer play. The combination of mesh 20 and coating 40 must allow glove fingers to come together, to bend forward into a fist, and to open to at least a finger curve matching the curve of a soccer ball. As glove fingers come together, mesh 20 and coating 40 fold in the spaces between fingers, and as glove fingers spread open to the positions illustrated, mesh 20 and coating 40 extend in planes between glove fingers.

[0024] When glove 10 is originally made, mesh 20 and coating 40 are preferably applied in a curved finger orientation as shown schematically by broken line 39 in Figure 3. This establishes a laminate effect with thumb and fingers curved slightly forward, in a natural relaxed position of a hand. This results in mesh 20 and its coating 40 applying resistance to bending the fingers to a flat position from the relaxed curved position in which mesh 20 is anchored in place and coating 40 is applied. Any bending of glove fingers backward from a flat position is then resisted even more strongly. From the wearer's point of view, a feeling of security comes from sensing glove resistance when fingers and thumb bend to a flat position, which is seldom necessary during goalkeeper actions.

[0025] Curve 37, as shown in Figure 3 represents a curved surface that may be spherical or aspherical. A radius of curvature of surface 39 to which the palm face of glove 10 conforms during manufacture is preferably approximately the radius of a soccer ball. Soccer balls for children and adults can vary in radii, and a radius of curvature for the unstressed palm face of glove 10 can range from slightly less to somewhat more than the expected radius of curvature of a soccer ball. This places the preferred radius of curvature of surface 39 in a range of 76,2-152,4 mm (3 to 6 inches). Arranging a strand mesh in a curved laminate form on a palm face of glove 10 ensures increased resistance as gloved fingers or thumb are moved rearward from a plane of the palm of the glove.

[0026] Material 40, besides bonding mesh material 20 to glove material 19 also provides another layer In a bending resistance laminate. Although bonding material 40 is preferably an elastomer and therefor somewhat stretchable, it still adds some stretch resistance to mesh 20 to brace glove 10 against back bending of fingers. A coating that is adequately flexible but also resistant to stretching In a direction required for back bending of fingers can add even more back bending resistance by increasing palm face laminate stretch resistance.

[0027] An alternative embodiment shown in Figure 6 illustrates similar principles applied in a much coarser meshwork of longitudinal strands 50 extending from wrist 55 to fingertips 51 of glove 60. Cross-strands 70 extend between distal finger ends and interconnect fingers at corresponding points along their lengths to provide inter finger support, and to strengthen back bending resistance provided by longitudinal strands 50. Cross-strands 70 are preferably bonded to longitudinal strands 50. A coating material can be applied to palm surfaces of glove

60 to bond strands 50 and 70 in place, but the mesh work provided by stands 50 and 70 is too coarse to support any bonding material in spaces between finger 51.

[0028] Materials technology may suggest spider web like mesh works that are light and strong and readily bonded to glove fingers to practice the invention. If a mesh work material also provides high friction and can be securely bonded to glove material, then coating 40 can be omitted. If may also be possible to build a finger bracing laminate directly into glove material 19 as a glove is fabricated. This would involve flexible and stretch resistant material on a palm face of the glove and between glove fingers, preferably formed in an initial curvature matching a relaxed posture of the human hand, and anchored at wrist and fingertips to form the necessary back bending resistance. The rest of the glove, including the backside of the hands and fingers could be made of any comfortable material that holds the glove in place. Any preferred arrangement will subject the palm face material of the finished glove to substantial tensile stretching force before allowing back bending of the glove fingers.

[0029] Figure 8 illustrates a variation of the Figure 5 embodiment having additional side folds of mesh material 20 around the thumb and little finger. These digits are most vulnerable to bending backward, because they are not supported on both sides by other fingers. Extending a palm face of strand mesh 20 so as to wrap around the thumb and little finger regions of the glove and attach to the backside of the glove increases back bending support for the thumb and little finger. In the variations shown in Figure 8, a strand material portion 36 that is wrapped around the thumb preferably extends to and is bonded to the backside of the index finger, as illustrated. Another strand mesh portion 37 wrapped around the little finger preferably extends to and is bonded to a back face of the ring finger, as illustrated. Many other arrangements are possible.

[0030] The embodiment of Figure 9 shows a strand mesh 25 arranged on a triangulation pattern. At least two strand supports that are angled from each other extend from the tip of the thumb and each finger to a wrist or palm region of the glove to support each digit at at least two angles. A wide variety of such strand mesh works 25 are possible, with the goal being location of tension and stress resistant strands in the best regions of the palm face of the glove to provide the desired back bending resistance.

[0031] The schematic embodiment of an unstranded glove 10, as shown in Figure 10, illustrates approximate thumb and finger tendon lines 35 shown in broken lines. Lines 35 follow generally and approximately along bone and tendon structure lines of a thumb and fingers within glove 10. These lines are the ones that benefit most from back bending reinforcement when a strand mesh is later applied to the glove 10 of Figure 10. Strands of a mesh need not follow directly along tendon lines 35, but any mesh or screen material applied to the palm face of glove 10 must have tension and stress resistance effectively applied along tendon lines 35.

[0032] The glove 10 of Figure 9 shows bonding or friction material 38 arranged along thumb and finger tendon lines. Material 38 can enhance a frictional grip of glove 10, and can also accomplish bonding of mesh 20 to the palm face of glove 10. Frictional material 38 can also be arranged or extended into other regions of the palm face of glove 10, but is especially effective when arranged along tendon lines, as shown in Figure 11.

Claims

1. A soccer goalkeeper glove (10, 60) having a thumb, fingers, a palm face, a back face, a wrist region (35, 55), and a wrist strap (36, 56), wherein:

   a. the palm face of the glove (10, 60) being formed as a laminate extending from the wrist region (35, 55) of the glove (10, 60) to tip regions (31, 51) of the thumb and fingers of the glove (10, 60);
   b. the laminate having substantial tensile strength, being substantially unstretchable;
   c. the wrist strap (36, 56) being arranged to anchor the laminate at the goalkeeper's wrist to inhibit movement of the laminate toward the tip regions (31, 51) of the thumb and fingers of the glove (10, 60);
   d. the laminate being disposed on the palm face of the glove (10, 60) to extend along a curved surface forward of a thumb, fingers, and palm of the goalkeeper's hand; and
   e. the tensile strength of the laminate being sufficient to substantially resist being disposed on an outside of a curve formed by bending back the thumb or fingers of the goalkeeper's hand from a plane of the palm of the glove (10, 60).

2. The glove of claim 1 wherein the laminate extends over the thumb and finger tip regions (31, 51) to the back face of the glove (10, 60) in the thumb and finger tip regions (31, 51) and is secured to rear faces (32) of the thumb and fingers of the glove (10, 60).

3. The glove of claim 1 or 2 wherein the laminate extends between the thumb and fingers of the glove (10, 60).

4. The glove of claim 1, 2 or 3 wherein the palm face of the glove (10, 60) in an unstressed condition conforms the thumb and fingers to a curved surface (39) having a radius of about 76,2-152,4 mm (3-6 inches).

5. The glove of claim 1 to 4 wherein the laminate comprises a high coefficient of friction material.

6. The glove of one of the claims 1 to 4 wherein the

laminate includes a mesh material.

7. The glove of one of the claims 1 to 6 wherein the laminate extends from a palm face of the thumb around a back face of the thumb and is attached to a back face of the glove (10, 60).

8. The glove of one of the claims 1 to 7 wherein the laminate extends around a palm face of a little finger of the glove (10, 60) and around a back face of the little finger and is attached to a back face of the glove (10, 60).

9. The glove of one of the claims 1 to 8 wherein the laminate comprises strands.

10. The glove of claim 9 wherein the strands form a mesh.

11. The glove of one of claims 9 or 10 wherein strands of the mesh are bonded at strand crossings.

Patentansprüche

1. Fußballtorwarthandschuh (10, 60) mit einem Daumen, Fingern, einer Handflächenseite, einer Rückseite, einem Handgelenkbereich (35,55) und einem Handgelenkgurt (36, 56), wobei:

   a. die Handflächenseite des Handschuhs (10, 60) als Verbundstoff ausgebildet ist, der sich von dem Handgelenkbereich (35, 55) des Handschuhs (10, 60) bis zu Spitzenbereichen (31, 51) des Daumens und der Finger des Handschuhs (10, 60) erstreckt;
   b. der Verbundstoff hat eine große Zugfestigkeit und ist im Wesentlichen undehnbar;
   c. der Handgelenkgurt (36, 56) ist so angeordnet, dass er den Verbundstoff an dem Torwarthandgelenk befestigt, um eine Verlagerung des Verbundstoffs in Richtung der Spitzenbereiche (31, 51) des Daumens und der Finger des Handschuhs (10, 60) zu verhindern;
   d. der Verbundstoff ist auf der Handflächenseite des Handschuhs (10, 60) so angeordnet, dass er sich entlang einer gewölbten Oberfläche über einen Daumen, Finger und Handfläche der Torwarthand erstreckt; und
   e. die Zugfestigkeit des Verbundstoffs ist ausreichend, um einer Verlagerung in eine Außenfläche einer Wölbung im Wesentlichen standzuhalten, die durch ein Zurückbiegen des Daumens oder der Finger der Torwarthand aus einer Ebene der Handfläche des Handschuhs (10, 60) heraus gebildet wird.

2. Handschuh nach Anspruch 1, wobei sich der Verbundstoff über die Spitzenbereiche (31, 51) des Daumens und der Finger zu der Rückseite des Handschuhs (10, 60) in die Spitzenbereiche (31, 51) des Daumens und der Finger erstreckt und an Hinterseiten (32) des Daumens und der Finger des Handschuhs (10, 60) fixiert ist.

3. Handschuh nach Anspruch 1 oder 2, wobei sich der Verbundstoff zwischen dem Daumen und den Fingern des Handschuhs (10, 60) erstreckt.

4. Handschuh nach Anspruch 1, 2 oder 3, wobei die Handflächenseite des Handschuhs (10, 60) in einem entspannten Zustand den Daumen und die Finger zu einer gewölbten Oberfläche (39) formt, die einen Radius von ungefähr 76,2 - 152,4 (3-6 inches) aufweist.

5. Handschuh nach den Ansprüchen 1 bis 4, wobei der Verbundstoff ein Material mit einem hohen Reibungskoeffizienten aufweist.

6. Handschuh nach einem der Ansprüche 1 bis 4, wobei der Verbundstoff ein Netzmaterial umfasst.

7. Handschuh nach einem der Ansprüche 1 bis 6, wobei sich der Verbundstoff von einer Handflächenseite des Daumens aus um eine Rückseite des Daumens herum erstreckt und an einer Rückseite des Handschuhs (10, 60) befestigt ist.

8. Handschuh nach einem der Ansprüche 1 bis 7, wobei sich der Verbundstoff um eine Handflächenseite eines kleinen Fingers des Handschuhs (10, 60) und um eine Rückseite des kleinen Fingers herum erstreckt und an einer Rückseite des Handschuhs (10, 60) befestigt ist.

9. Handschuh nach einem der Ansprüche 1 bis 8, wobei der Verbundstoff Fäden umfasst.

10. Handschuh nach Anspruch 9, wobei die Fäden ein Netz bilden.

11. Handschuh nach einem der Ansprüche 9 oder 10, wobei Fäden des Netzes an Fadenkreuzungen verbunden sind.

Revendications

1. Gant pour gardien de but de football (10, 60) ayant un pouce, des doigts, un côté paume, une face arrière, une région de poignet (35, 55) et une bande de poignet (36, 56), dans lequel :

   a. le côté paume du gant (10, 60) ayant la forme d'une couche stratifiée qui s'étend à partir de la

région du poignet (35, 55) du gant (10, 60) jusqu'aux régions des extrémités du pouce et des doigts (31, 51) du gant (10, 60) ;
b. la couche stratifiée ayant une résistance à la traction significative, et étant sensiblement non étirable ;
c. la bande de poignet (36, 56) étant agencée pour ancrer la couche stratifiée au niveau du poignet du gardien de but afin d'empêcher le mouvement de la couche stratifiée vers les régions du pouce et des extrémités des doigts (31, 51) du gant (10, 60) ;
d. la couche stratifiée étant disposée sur le côté paume du gant (10, 60) pour s'étendre le long d'une surface incurvée à l'avant du pouce, des doigts et de la paume de la main du gardien de but ; et
e. la résistance à la traction de la couche stratifiée étant suffisante pour résister de manière significative et étant disposée sur l'extérieur d'une courbe formée en courbant vers l'arrière le pouce ou les doigts de la main du gardien de but à partir d'un plan de la paume du gant (10, 60).

2. Gant selon la revendication 1, dans lequel la couche stratifiée s'étend par-dessus les régions des extrémités du pouce et des doigts (31, 51) jusqu'à la face arrière du gant (10, 60) dans les régions des extrémités du pouce et des doigts (31, 51) et est fixé sur les faces arrière (32) du pouce et des doigts du gant (10, 60).

3. Gant selon la revendication 1 ou 2, dans lequel la couche stratifiée s'étend entre le pouce et les doigts du gant (10, 60).

4. Gant selon la revendication 1, 2 ou 3 dans lequel le côté paume du gant (10, 60) dans un état exempt de contraintes, conforme le pouce et les doigts à une surface incurvée (39) ayant un rayon d'environ 76,2 à 152,4 mm (3 - 6 pouces).

5. Gant selon les revendications 1 à 4, dans lequel la couche stratifiée comprend un coefficient élevé de matériau de frottement.

6. Gant selon l'une des revendications 1 à 4, dans lequel la couche stratifiée inclut un matériau de filet de maille.

7. Gant selon l'une des revendications 1 à 6, dans lequel la couche stratifiée s'étend à partir d'une côté paume du pouce autour d'une face arrière du pouce et est fixé à une face arrière du gant (10, 60).

8. Gant selon l'une des revendications 1 à 7, dans lequel la couche stratifiée s'étend autour d'une côté paume du petit doigt du gant (10, 60) et autour d'une face arrière du petit doigt et est fixé à la face arrière du gant (10, 60).

9. Gant selon l'une des revendications 1 à 8, dans lequel la couche stratifiée comprend des fils.

10. Gant selon la revendication 9, dans lequel les fils forment un filet de maille.

11. Gant selon l'une des revendications 9 ou 10 dans lequel les fils du filet de maille sont liés au niveau des croisements de fil.

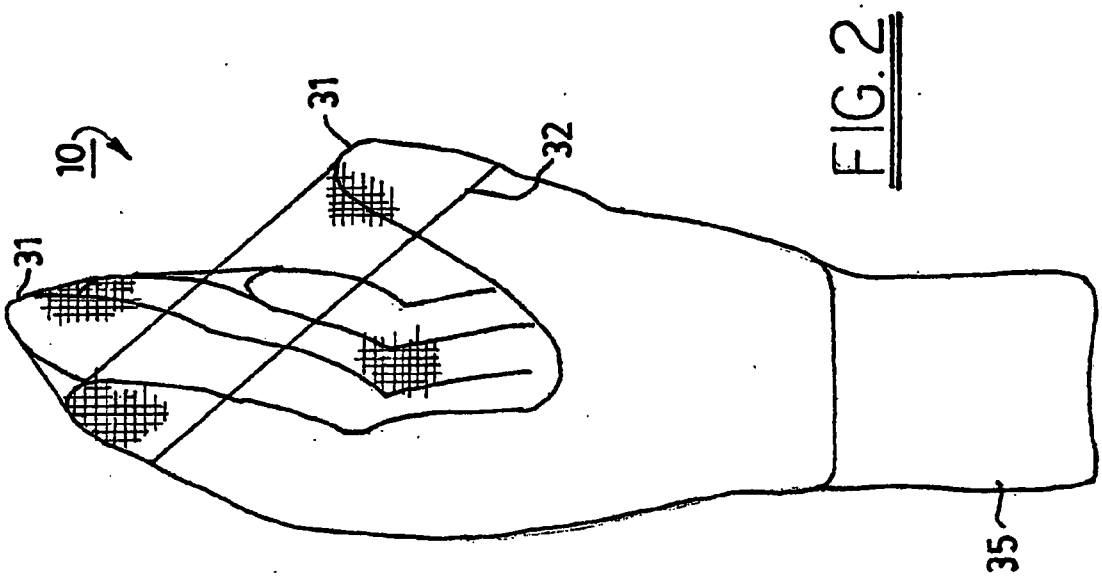

FIG. 2

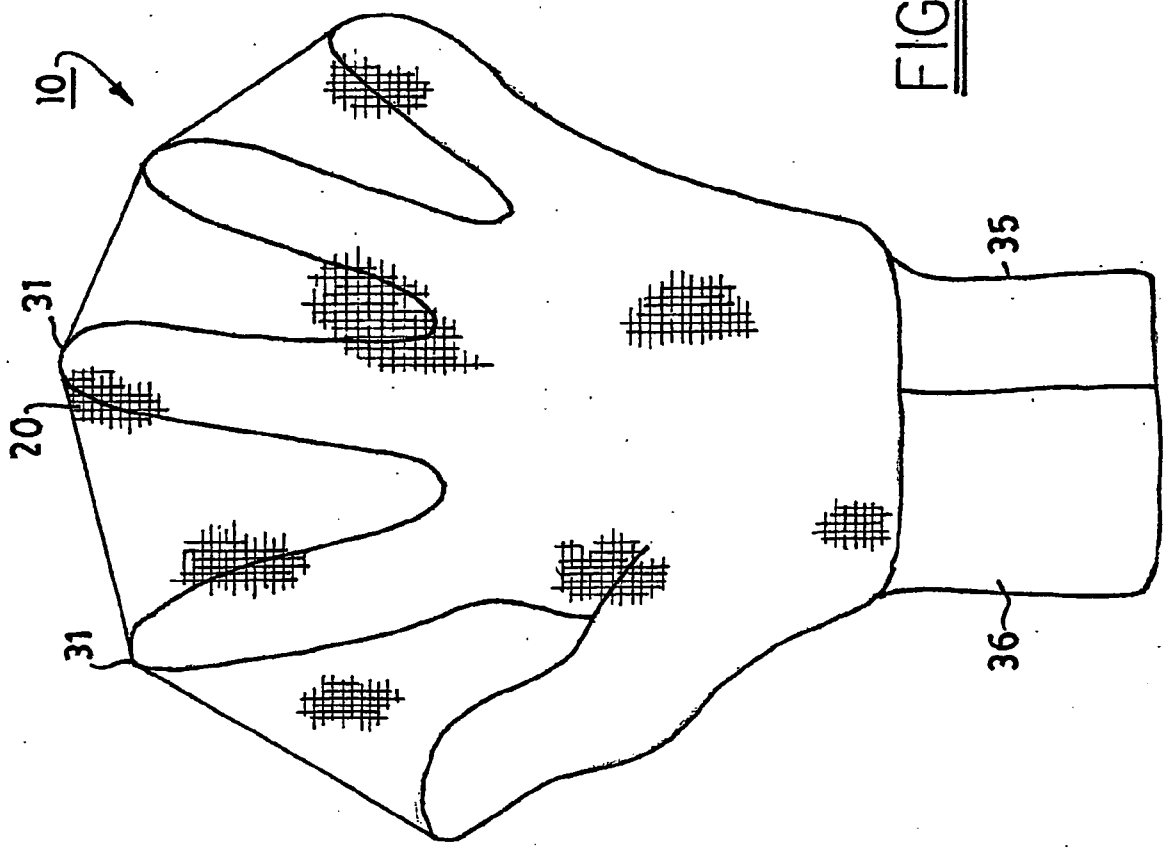

FIG. 1

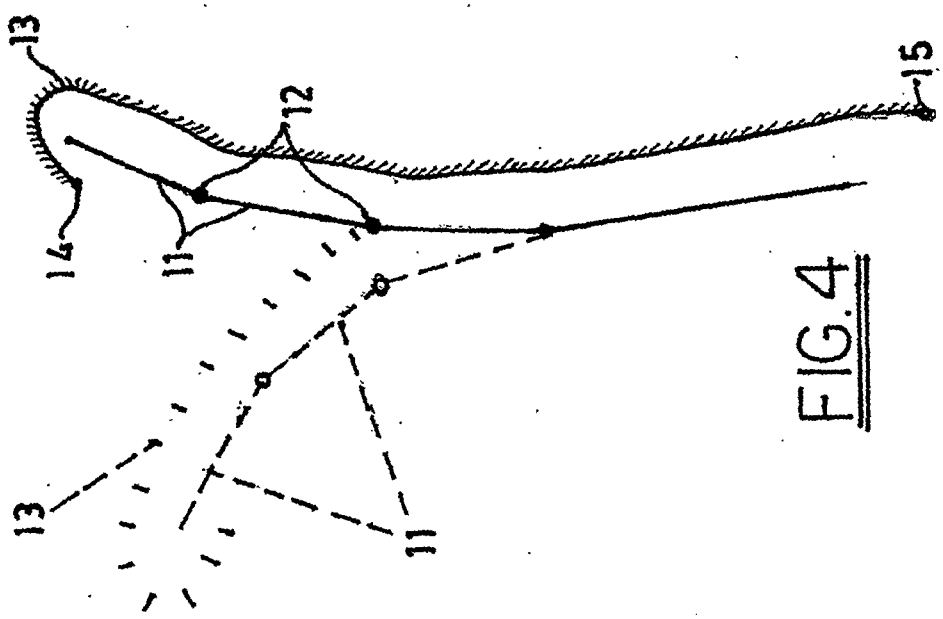

FIG. 4

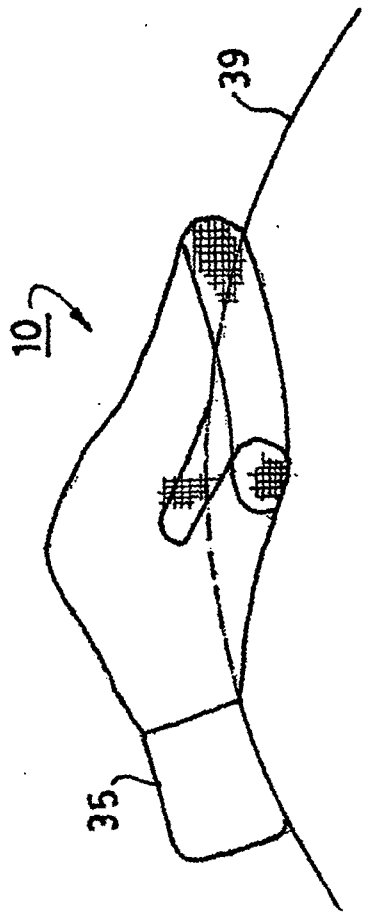

FIG. 3

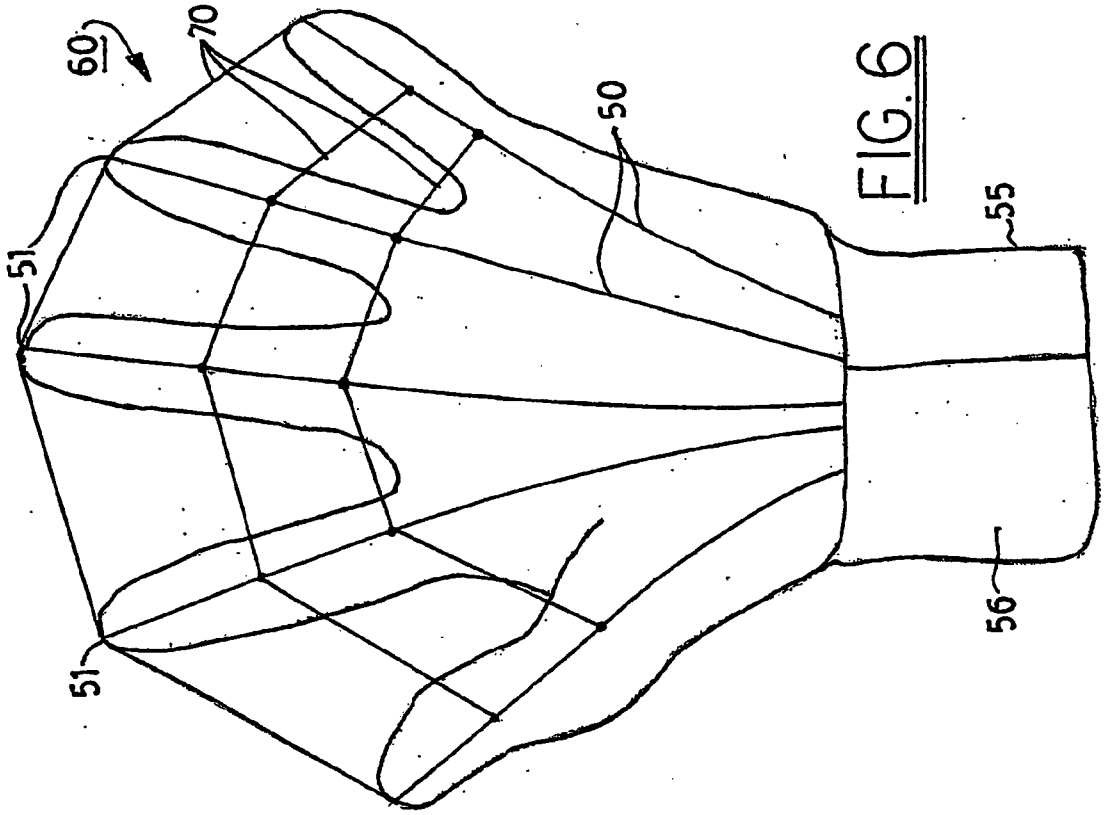

FIG. 6

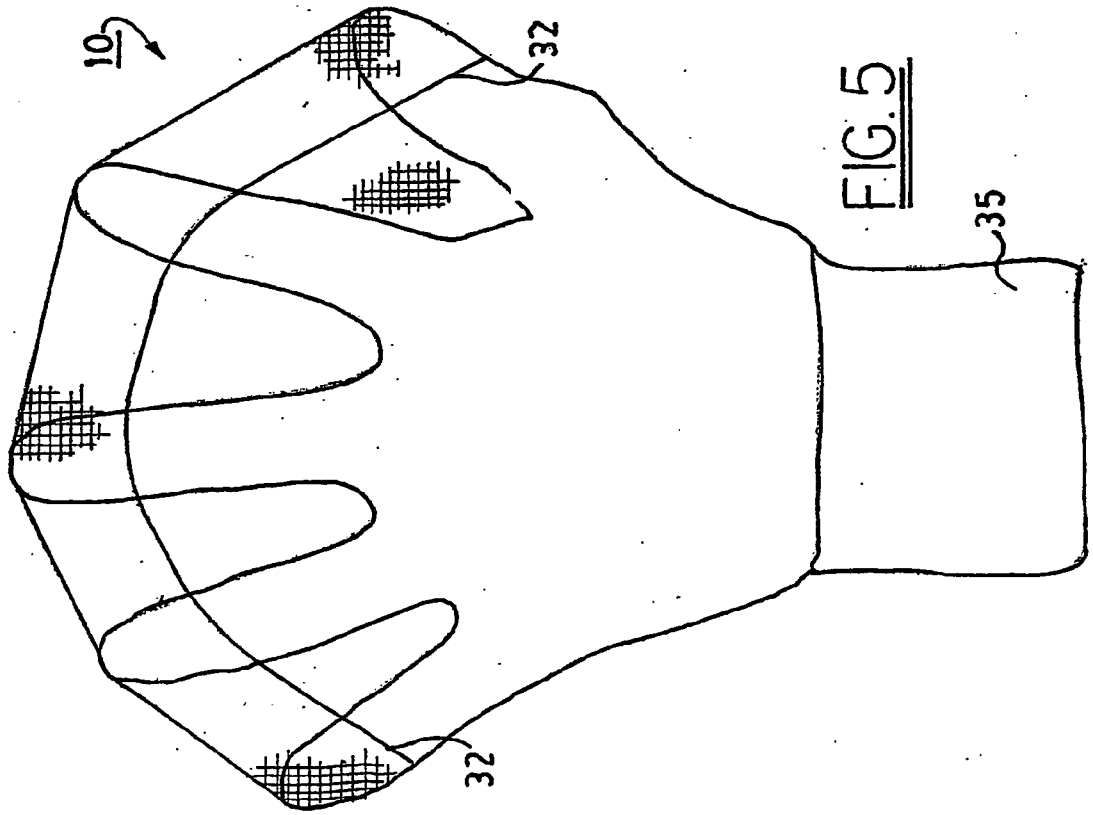

FIG. 5

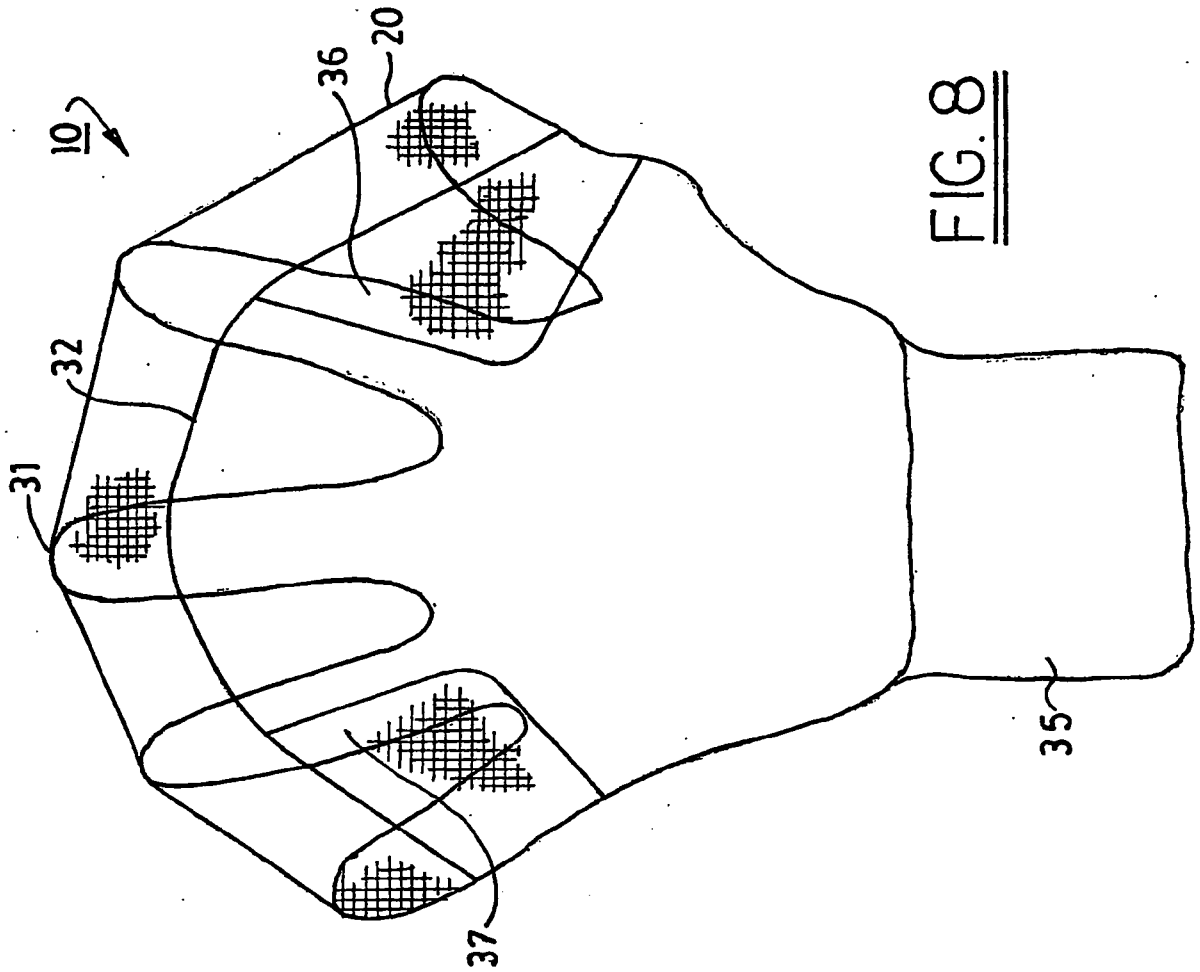

FIG. 8

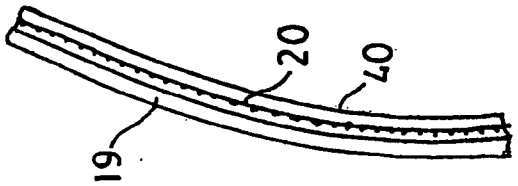

FIG. 7

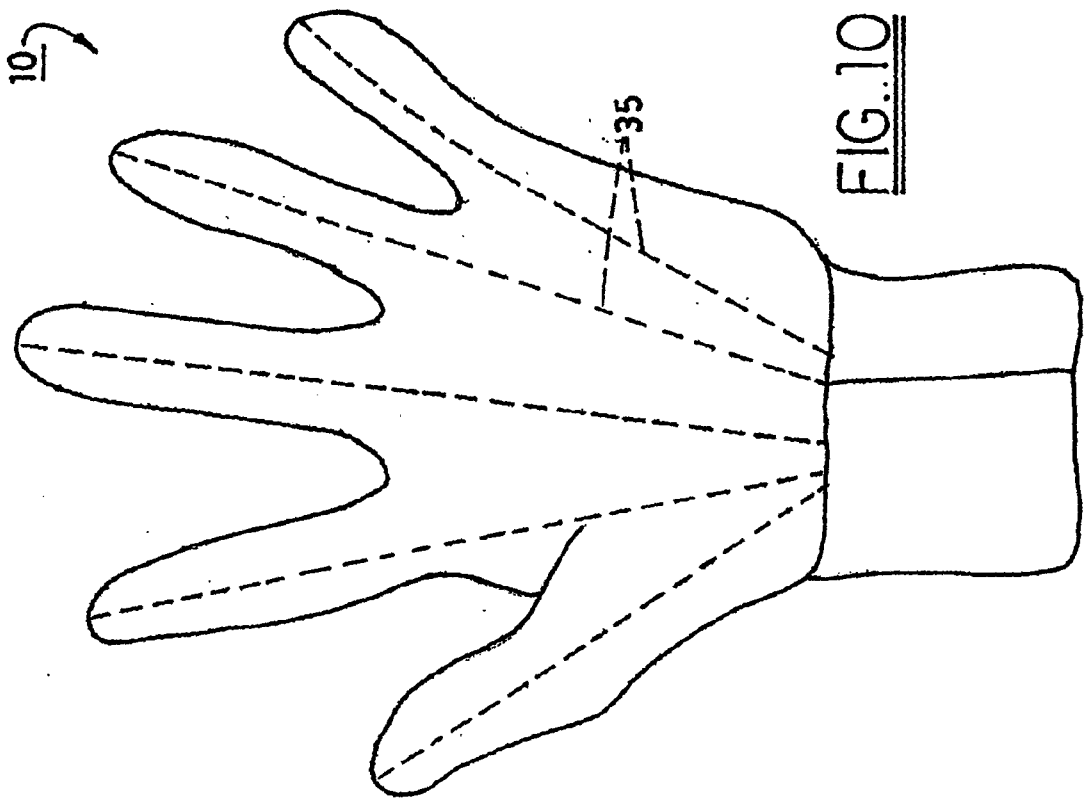

FIG.10

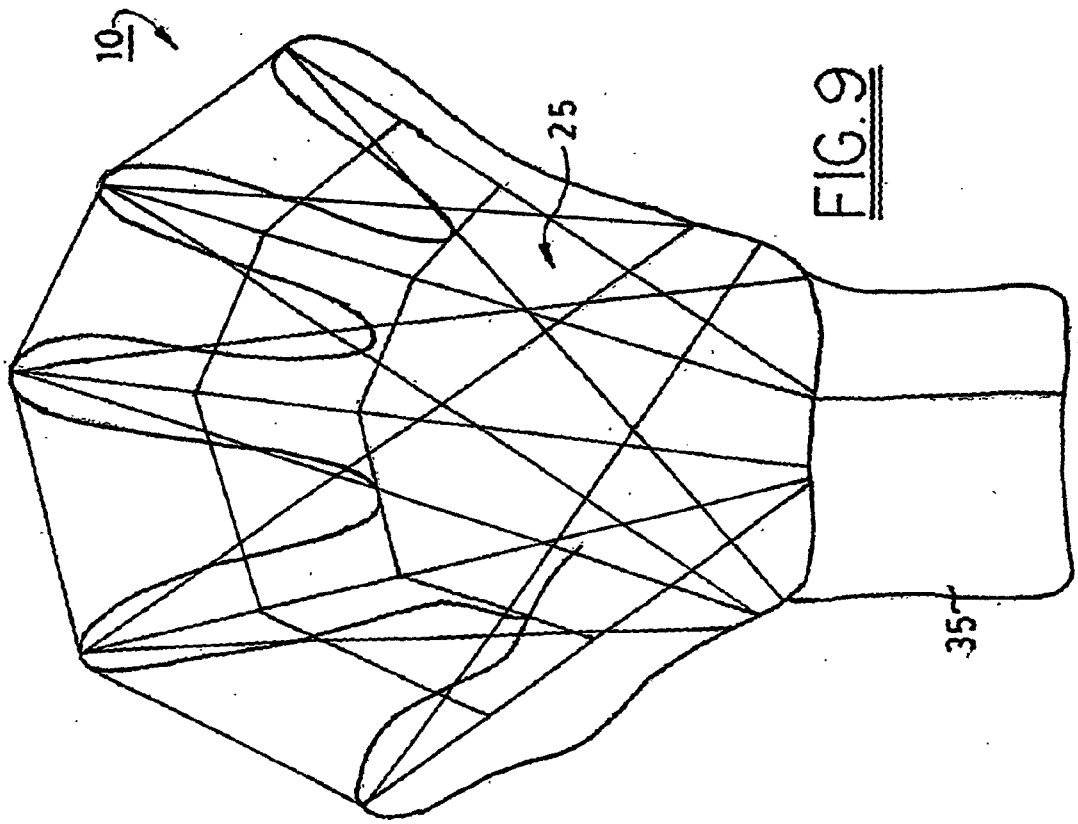

FIG.9

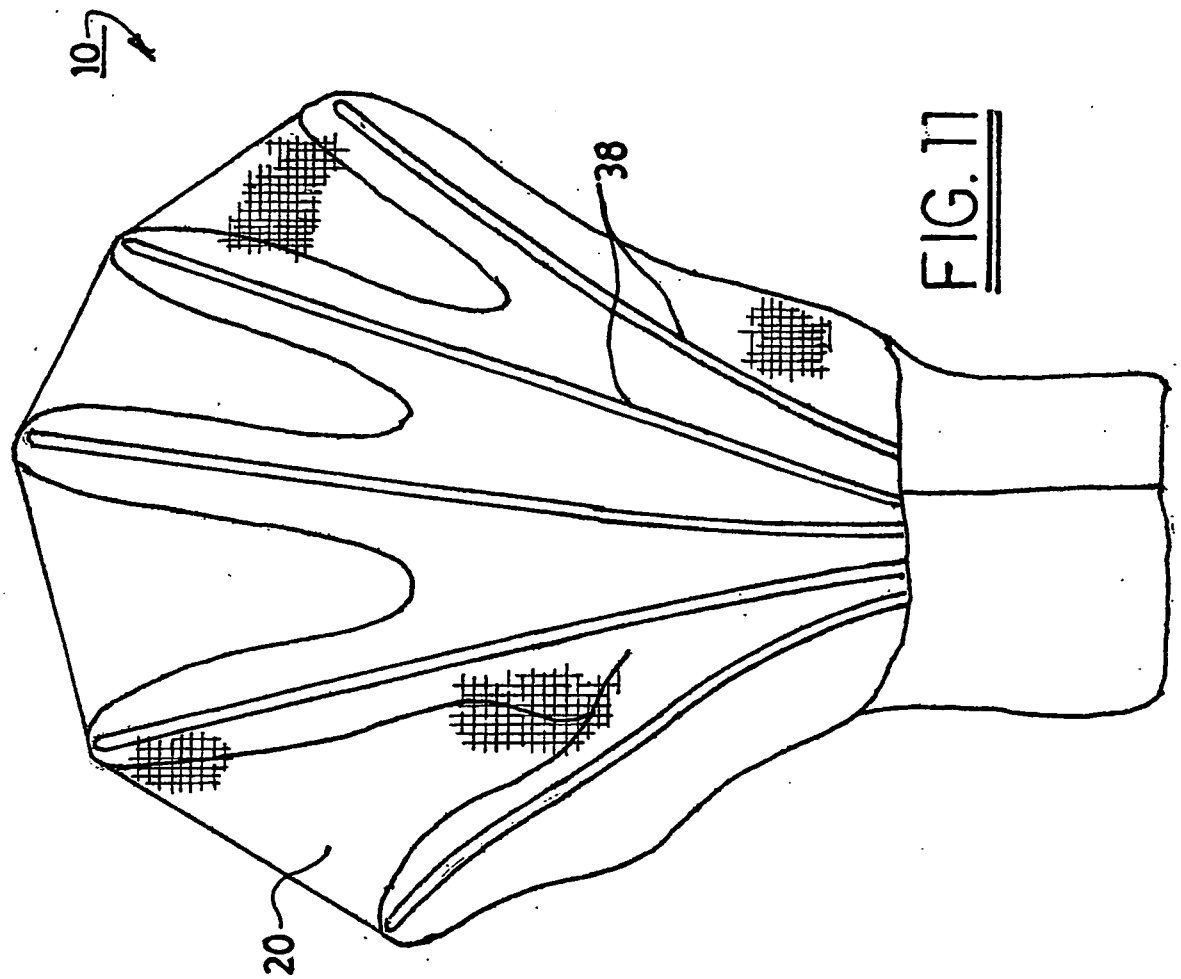

FIG. 11

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 60358607 B **[0001]**
- US 3333850 A **[0005]**
- US 3880426 A **[0006]**