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(54) **GOLF PRACTICE DEVICE**

VORRICHTUNG FÜR DAS GOLFTRAINING

DISPOSITIF D'ENTRAÎNEMENT DE GOLF

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(56) References cited:
WO-A-00/02629 WO-A1-00/02629
GB-A- 1 158 596 US-A- 1 218 390
US-A- 2 397 921 US-A- 3 895 809
US-A- 4 949 979 US-A- 5 018 731
US-A- 5 823 885

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Description

Field of the Invention

[0001] The present invention relates to apparatus for practising ball sports. It is particularly suited to the practice of golf but is readily adaptable to other ball sports.

Background Art

[0002] A wide variety of practice nets for ball sports have been attempted. Golf is a particular sport where a compact practice net has been found to be most desirable but which has been quite difficult to successfully provide due to the particular problems associated with the practice of that sport. Hereinafter, this description will describe the invention with respect to the art of golf and its application for practising golf. However, it is to be recognised that the invention disclosed herein is readily adaptable to other ball sports.

[0003] Many attempts have been made to provide a golf practise net to enable a person to practise hitting a normal golf ball. Typically, such devices incorporate a net or other membrane arranged to receive the ball struck by the person, the net being supported by some type of frame. However, many of these types of apparatus suffer from the disadvantage of not being portable such that the golfer can practise striking the ball at any desired location. For many, also, the net must be placed forward of the person rendering quite likely that if the person does not strike the ball accurately, the ball will miss the target completely. This limits places where such nets can be used to locations where it does not cause a problem if the ball is mis-hit and misses the net. In general, those that are relatively portable require support by insertion of support stakes into the ground or attachment of support means to a nearby fixtures. This prevents use in average indoor domestic environments. Another problem usually facing such nets is that the balls once struck remain at the net so that it is necessary to walk to the net after hitting a group of balls to collect the balls. Yet another problem that has been common is that the nets have had very limited durability when struck by balls hit by skilled users, as such users can impart very considerable momentum and energy to a golf ball. The impact of a high energy ball upon the net causes damage which leads to rapid deterioration of the net. If a net or membrane of sufficient strength is used to prevent rapid deterioration, the apparatus becomes too heavy for easy portability.

[0004] Some attempts have been made to overcome these problems. A number such as those disclosed in US 5,018,731 (Doyle) and US 4,556,219 (Tillery) have provided nets which fully enclose the player to ensure that any mis-hit ball is certain to strike the net. While such devices are effective in avoiding accidents, they must of necessity be so large that they cannot be used in ordinary domestic environments where the height is limited. GB2140311 (Collings) discloses an apparatus having a

conical shaped net having an open end supported from an arched frame and a closed end supported forward of the arched frame from a support member extending from the top of the arched frame. Side panels may be supported from the upright members of the arched frame and extending rearwardly of the user to be held in the ground by pegs or stakes. However, for domestic use, the disclosure proposes that the net may be disconnected from the frame and support and suspended from convenient fixtures.

[0005] A considerable advance over previous attempts has been disclosed previously by the present applicant in International application WO 00/02629. Nevertheless, it has been found that even this device exhibits various short-comings.

[0006] The preceding discussion of the background to the invention is intended only to facilitate an understanding of the present invention. It should be appreciated that the discussion is not an acknowledgement or admission that any of the material referred to was part of the common general knowledge as at the priority date of the application.

Disclosure of the Invention

[0007] Accordingly, the invention resides in golf practice device according to claim 1.

[0008] According to a preferred feature of the invention, a segment of the perimeter of the open end underlies the base from the each side of a rear portion of the playing surface.

[0009] According to a preferred feature of the invention, the net is formed from cylindrical construction.

[0010] According to a preferred embodiment, the open end is oblique relative to the cylindrical axis.

[0011] According to a preferred embodiment, the closed end is transverse relative to the cylindrical axis.

[0012] According to a preferred embodiment, the support that supports the closed end is not connected to the base.

[0013] According to a preferred embodiment, the ends of the resilient elongate support are fixed to the sides of the base intermediate opposite ends of said sides.

[0014] According to a preferred embodiment, the edge of the open end is supported by a resiliently flexible member.

[0015] According to a preferred feature of the invention, the top of the open end is disposed at a height that is not greater than the height of an average man standing on the playing surface

[0016] According to a further aspect, the invention also resides in a golf practice device, comprising;

a base having a front, a rear, and a pair of sides, and defining a playing surface upon which a person using the device is intended to stand during use, the playing surface being defined between the front, rear and sides of the base;

a flexible, resilient, elongate, upstanding frame element

extending upwardly from the sides of the base intermediate the front and the rear of the base, said frame having an uppermost point;
 an enclosure having an open end and a closed end, the open end being supported by the upstanding frame;
 a free standing support;
 the enclosure being supported in the vicinity of the closed end by the free-standing support forwardly of the front of the base to apply tension to the enclosure between the closed end and the open end whereby the enclosure defines an elongate space which is divergent from the closed end to the open end;
 the enclosure having a lower portion between the closed end and the front of the base that is inclined downwardly from the closed end to enable a ball to return to the playing surface, and the open end extending rearwardly from the upstanding frame along each side of the base to adjacent the rear of the base to thereby define lateral portions rearwardly of the upstanding frame element;
 each lateral portion decreasing in height from the upstanding frame element to adjacent the rear of the base wherein the enclosure is formed of a membrane which, when the device is erected, is able to be deflected when struck by a driven golf ball to thereby absorb a significant proportion of the kinetic energy of the golf ball.

[0017] According to a preferred feature of the invention, a segment of the open end underlies the base from each side rearwardly of the upstanding frame element.

[0018] According to a preferred feature of the invention, the frame element is caused to be resiliently deflected forwardly by the tension created in the enclosure by the free-standing support.

[0019] According to a preferred feature of the invention, the frame element is able to resiliently flex upon a golf ball impacting the membrane to absorb some kinetic energy of the golf ball.

[0020] According to a preferred feature of the invention, the frame element is able to resiliently flex forwardly or sidewardly or both forwardly and sidewardly on said impact.

[0021] According to a preferred feature of the invention, the membrane comprises netting.

[0022] According to a preferred embodiment, the free-standing support comprises an element adapted to receive a counterweight.

[0023] According to a preferred embodiment, the free-standing support comprises a support structure adapted to support the enclosure above a supporting surface, the support structure comprising contact portions adapted to contact the supporting surface at positions intermediate the base and the closed end.

[0024] According to a preferred embodiment, the support structure comprises a body and a pair of arms, the arms extending from the body to contact the supporting surface at positions intermediate the base and the closed end.

[0025] According to a preferred embodiment, the arms extend laterally from the body in opposed directions to

provide clearance from the membrane.

[0026] According to a preferred feature of the invention, the sides of the base converge from the rear to the front.

5 **[0027]** According to a preferred embodiment, the base is substantially trapezoidal in shape.

[0028] According to a preferred embodiment, the base comprises a base frame enclosing the playing surface, the base frame comprising a front member, a rear member and pair of side members, wherein the base frame members comprise a plurality of removably interconnected sub-members.

10 **[0029]** According to a preferred feature of the invention, a lower rearward portion of the membrane extends beneath the base.

15 **[0030]** According to a preferred feature of the invention, the closed end comprises an end element adapted to receive and support the membrane at the closed end.

20 **[0031]** According to a preferred embodiment, the end element comprises a cup-like element, and wherein the membrane is supported by the side of the cup-like element.

25 **[0032]** According to a preferred embodiment, the cup-like element comprises a deformable material adapted to absorb kinetic energy from a golf ball impacting the cuplike element.

[0033] According to a preferred embodiment, the cup-like element is formed of a leather material.

30 **[0034]** According to a preferred embodiment, energy-absorbing material is associated with the end element.

[0035] According to a preferred embodiment, the energy-absorbing material is situated within a space enclosed by the cup like element and a deformable membrane adapted to be struck by the ball.

35 **[0036]** According to a preferred embodiment, the energy-absorbing material comprises high-density, low-recoil foam pellets.

40 **[0037]** According to a preferred embodiment, the cup-like element further comprises apertures adapted to permit the release of air from the space enclosed by the cup like element and the deformable membrane.

45 **[0038]** According to a further aspect, the invention also resides in a device for practicing ball sports comprising an enclosure defined by a membrane supported from a self-supporting structure, said structure comprising a base having a playing surface and having a forward edge and a support means spaced forwardly and upwardly of the base and supported at least in part from the base, said structure further comprising an upstanding frame supported from the sides of the base and extending over the base and having an uppermost point, said enclosure being supported from said structure to define a space having an open end and a closed end, said space being of a general conical configuration, said open end being supported from the base to maintain said open end in an open condition adjacent the forward edge and the closed end being supported from the support means in spaced relation to the open end, wherein the lower portion of the

enclosure is inclined downwardly from the closed end to the base to enable a ball thereon to return to the playing surface and wherein the enclosure extends to each side of the base to provide lateral panels to each side of the base rearwardly of the forward edge of the base, the open end having an upper rear edge extending from the rear of the base and being inclined forwardly from the rear of the base to pass adjacent the uppermost point of the upstanding frame, wherein the open end is defined by a first resiliently flexible elongate member received in the upper rear edge of the membrane and resiliently deformed to define the open end, and wherein the open end of the enclosure is further defined by a portion which underlies the base and which extends between the sides thereof.

[0039] According to a preferred feature of the invention, the enclosure has the general shape of a cylinder wherein one end of the cylinder accommodates the first and second elongate elements and the other end is gathered to provide the closed end.

[0040] According to a preferred feature of the invention, said portion which underlies the base comprises a second resiliently flexible elongate member received in an edge of the membrane and fixed at its ends to the sides of the base and said second elongate member being resiliently bent to an arcuate configuration extending rearwardly away from the forward edge

[0041] The invention will now be more fully understood in light of the following description of specific embodiments.

Brief Description of the Drawings

[0042] The description is made with reference to the accompanying drawings of which:

Figure 1 is an isometric view of the first embodiment when erected;

Figure 2 is an isometric view of the base of the first embodiment;

Figure 3 is an exploded view of the base of the first embodiment;

Figure 4a is a side elevation of a central sub-member of a side member according to the first embodiment;

Figure 4b is a plan view of the central sub-member shown in Figure 4a;

Figure 4c is an isometric view of the central sub-member shown in Figure 4a;

Figure 4d is an alternative isometric view of the central sub-member of Figure 4a;

Figure 4e is a sectional view of the central sub-member

shown in Figure 4a along section line B-B;

Figure 5a is a side elevation of an end sub-member of a side member according to the first embodiment;

Figure 5b is a plan view of the end sub-member shown in Figure 5a;

Figure 5c is an isometric view of the end sub-member shown in Figure 5a;

Figure 5d is an alternative isometric view of the end sub-member shown in Figure 5a;

Figure 5e is an end view of the end sub-member shown in Figure 5a;

Figure 5f is a sectional view of the end sub-member shown in Figure 5a along section line A-A;

Figure 6a is a side elevation of a middle sub-member of the forward member according to the first embodiment;

Figure 6b is a plan view of the middle sub-member shown in Figure 6a;

Figure 6c is a plan view of the base of middle sub-member shown in Figure 6a;

Figure 6d is an isometric view of the middle sub-member shown in Figure 6a;

Figure 6e is an alternative isometric view of the middle sub-member shown in Figure 6a;

Figure 6f is an end view of the middle sub-member shown in Figure 6a;

Figure 6g is a sectional view of the middle sub-member shown in Figure 6a along section line A-A;

Figure 7a is a side elevation of a middle sub-member of the rearward member according to the first embodiment;

Figure 7b is a plan view of the middle sub-member shown in Figure 7a;

Figure 7c is a plan view of the base of middle sub-member shown in Figure 7a;

Figure 7d is an isometric view of the middle sub-member shown in Figure 7a;

Figure 7e is an alternative isometric view of the middle sub-member shown in Figure 7a;

Figure 7f is an end view of the middle sub-member shown in Figure 7a;

Figure 7g is a sectional view of the middle sub-member shown in Figure 7a along section line A-A;

Figure 8a is a rear view of a cup supporting the closed end of the net according to the first embodiment;

Figure 8b is an isometric view of the cup shown in Figure 8a;

Figure 8c is a sectional view of the cup shown in Figure 8a along section line A-A;

Figure 9 is a sectional view of a portable support according to the first embodiment;

Figure 10a is an isometric view of a portable support according to the second embodiment;

Figure 10b is a front elevation of the portable support shown in Figure 10a;

Figure 10c is a side elevation of the portable support shown in Figure 10a;

Figure 10d is a plan view of the portable support of Figure 10a;

Figure 11 is a side elevation a golf practice device in accordance with the second embodiment incorporating the portable support of Figure 19a showing the relationship to the closed end of the net.

Figure 12 is a perspective view of a golf practice device in accordance with the second embodiment incorporating the portable support of Figure 10a.

Figure 13 is a front perspective of a golf practice device in accordance with the second embodiment.

Figure 14 is a partial section of a receiving bowl at the closed end in accordance with the second embodiment.

Figure 15 is an enlargement of the side of the receiving bowl as shown in Figure 14.

Detailed description of specific embodiments

[0043] The embodiments will be described with reference to golf balls being struck by a golfer using the full range of clubs including metal woods, woods, other driver clubs, including fairway woods, irons etc.

[0044] It is a feature of the embodiments that the apparatus may be erected on any suitable supporting surface such as reasonably flat ground or on the floor of a

room. It is a further feature of the embodiments that the apparatus is free standing and requires no structural support such as being tied to pegs in the ground or to a support column other than the separate free standing net support described as part of some of the embodiments.

[0045] A first embodiment is shown in Figures 1 to 10. The apparatus of the first embodiment comprises an enclosure 111 for catching a ball (not shown) having a membrane in the form of a net 112 having an open end 113 and a closed end 114 thereby defining a space 115 into which a ball may be projected. The net 112 is adapted to be supported at its open end 113 from a first self supporting structure 120 which comprises a base 121 and flexible resilient elongate frame element 130, as better shown in Figure 2.

[0046] The base 121 of the structure 120 comprises a base frame in which there is located a playing surface 126, the base frame defined by side members 122 and 123, a rear member 124 and a front member 125.

[0047] It has been found that it is advantageous for the outline of the base to be of substantially trapezoidal in form, having the two sides 122 and 123 converging from the rear to the front, as seen in the plan view. In this way the base is adapted to better cooperate with the net which is substantially conical in form when in use. A portion of the net is laid beneath the base and it has been found that a converging base form sits over the net in a way that avoids bunching and/or stretching of the net in localised areas. This configuration enables the net to be constructed by simple cylindrical netting thereby avoiding difficult and expensive net construction. The net 113 is of cylindrical or tubular construction, a construction method well known to those skilled in the art, having an edge transverse to the cylinder axis at one end to comprise the closed end and an edge formed obliquely to the cylinder axis at the other end to provide the open end.

[0048] The net may be formed from any suitable material but netting of Rachell Knotless Knitted type has been found to be particularly suitable. Nylon is the preferred cord material for forming the netting due to its strength and durability. However, other, less expensive materials, including polyester, polypropylene or polyethylene may also be used. However, nylon is preferred due to its superior strength which therefore provides the least weight per unit of area of netting material. It is also more pliable which enables the net to adopt the desired enclosure shape more readily and with lower tension applied. The netting mesh size is determined to be as large as practicable while still being capable of preventing the passage of the ball through the netting. The size selected will also depend upon the netting material chosen and its thickness. A net produced from nylon of 3mm thickness with a mesh size of 16mm x 16mm is considered optimum to stop a golf ball, although these parameters may be modified depending on the circumstances.

[0049] As shown in the exploded diagram of Figure 3, the playing surface 126 is defined by a first group of three, identically shaped mats 127, each of symmetrical trape-

zoidal shape, and a second group of three, identically shaped mats 128 each of symmetrical trapezoidal shape. The length of the non-parallel sides of the mats of the second group is the same as the length of the non-parallel sides of the first group, while the length of the shorter parallel side of mats of the second group is equal to the length of the longer side of the mats of the first group. In use, the mats are arranged on the supporting surface to provide the playing surface 126 in three columns of two mats side by side, each column being of symmetrical trapezoidal shape. The playing surface thereby is provided with two straight sides and a front end comprising three, equal-length segments and a rear end comprising three, equal-length segments.

[0050] Each mat comprises a support base with an upper surface suitable for practising the striking of a golf ball with a golf club. Synthetic lawn has been found to be very suitable although even good carpet has proved to be adequate for general practice. Indeed it is possible for the rear mats, only to be of a type suitable for striking the ball as a player would generally find he is too close to the net if he strikes from the forward mats.

[0051] As shown in Figure 2, the base frame, when assembled, provides a border surrounding and abuttingly conforming to the assembled playing surface 126.

[0052] In order to enhance portability, the side member 122 and 123, the front member 124 and the rear member 125 each comprise three sub-members.

[0053] The side member 122 comprises a central sub-member 131, a forward sub-member 132 and a rearward sub-member 133, while the side member 123 comprises a central sub-member 131, a forward sub-member 134 and a rearward sub-member 135.

[0054] As shown in Figures 4 a to e, each central sub-member 131 comprises an integrally moulded, substantially channelled-section member having an upper flange 135 joined to a lower flange 136 by a web 137. The lower flange 136 is planar and adapted to sit on a flat surface, while the upper flange 135 is arcuate as seen from the side view. The web 137 is inwardly indented at a position spaced from the upper and lower channel to provide additional stiffness. The central sub-member 131 is provided with a lattice of reinforcing ribs 138 extending the length of the sub-member within the channel portion. Centrally located along the length of the central sub-member 131 there is provided a laterally disposed tube portion 139 extending from the upper flange 135 to the lower flange 136, and attached to the web 137 for strength. The tube portion 139 is aligned with an aperture 140 in the upper flange 135 and adapted to receive an end of the frame element 130.

[0055] At each end of the central sub-member 131, there is provided a pair of male connecting means adapted to enable connection with the adjacent end sub-members 132 and 133 or 134 and 135, respectively. In the embodiment, each connecting means comprises a leg portion 141 extending from the respective end of the central sub-member 131 and terminating in a retaining head

142 overlying the leg portion 141.

[0056] Figures 5 a to f depict a sub-member suitable for use as sub-member 132 or 135. It should be understood that sub-members 133 and 134 are of the mirror image construction and are not separately described. The sub-members are generally of the same manner of construction as the central sub-member 131, having a substantially channel section with lattice reinforcement. At the end of each of the sub-members adjoining the central sub-member 131 there is provided female engaging means in the form of two apertures 143, each shaped with a profile corresponding with the outline of the male connecting means of the central sub-member 131 and adapted to engagingly receive the respective male connecting means. At the end of each of the sub-members remote from the central sub-member 131 there is provided connecting means in the form of a single male member 142 of corresponding design to those provided on the central sub-member when viewed from the side elevation as shown in Figure 5a. Each upper flange of the forward and rearward sub-members is arcuate when viewed from the side elevation as shown in Figure 5a. Due to the arcuate profile of the upper flange of the forward and rearward sub-members, the height of the side members reduces towards the end remote from the central sub-member 131.

[0057] The front member 124 comprises a middle sub-member 151, a left sub-member 152 and a right sub-member 153. Figures 6 a to g depict the middle sub-member 151. Each sub-member comprises a moulding from plastics material having a regular upper surface 161 extending from a transverse lip 162 at the inner edge to the outer edge. The inner edge of each sub-member has a height corresponding with the thickness of the mats of the playing surface. The profile of the upper surface 161 is arcuate so that, when the sub-member is placed on a planar surface for use, the upper surface extends substantially to the planar surface at the outer edge. The upper surface 161 is reinforced by a lattice of ribs 164 substantially transverse to the upper surface extending to the plane bounded by the lower edges of the sub-member. Corresponding connection means are provided at the ends of each sub-member for connection with the adjoining sub-member. The left and right sub-members 152 and 153 have connection means suitable for connecting with a corresponding forward side sub-member 132 or 134 respectively on their ends remote from the middle sub-member 151.

[0058] The rear member 125 comprises a middle sub-member 171, a left sub-member and a right sub-member. The middle sub-member 171 is shown in Figures 7 a to g. The manner of construction of the sub-members of the rearward member 125 is similar to that of the forward member, the profile of bottom surface incorporating a space 173 in order to accommodate the net 112 as discussed below. In addition, the rearward sub-members include identification markings 175 on the upper surface.

[0059] As mentioned above, the flexible frame element

130 is adapted to be supported from the sides of the base to form an arch able to support the open end of the net 112. The flexible frame element 130 comprises a rod or tube of substantial strength in order to be able to support the net 112 and may be formed from fibreglass or suitable plastics material such as a medium to high-density polyethylene to provide the relevant level of resilient flexibility. In use, the ends of the flexible frame element 130 are received within the tube portion 139 of each side member through each aperture 140. The exposed portions of the flexible frame element are covered by an energy absorbing material such as a foamed plastics material.

[0060] The net 112 is of drooping conical or horn-like configuration when in use, the horn-like shape extending from the closed end to the open end to direct a ball to roll from the closed end to the playing surface.

[0061] The closed end 114 is created by circumferentially binding the net 112 adjacent the closed end 114 about an end element in the form of a cup 181. The cup 181 is preferably made from leather as this material has been found to provide the required strength and durability together with the appropriate impact absorbing properties to absorb the energy of a ball in the event of a direct hit. The use of the cup 181 also prevents a ball from becoming jammed at the closed end 114 and reduces wear at that area of the net 112. As shown in Figure 8 a to c, the cup 181 comprises retaining means 182 adapted to be engaged by suitable supporting means. The cup 181 also incorporates a resilient pad 183 covering the base 185 of the cup 181. The pad 183 is adapted to further absorb the energy of a ball in the event of a direct hit. In addition, the base 185 of the cup 181 is mounted obliquely to the horizontal so that a direct hit is not reflected straight back to the player.

[0062] The closed end is supported above the supporting surface by suitable support means to hold the net 112 in extended form. While it may be possible to support the closed end from a neighbouring fixed structure such as a wall or a post extending from the supporting surface or by a support structure extending from the base, as disclosed in the applicant's previous disclosure, WO 00/02629, it has been found advantageous to provide a portable support 191 to enable the enclosure to be utilised on any supporting surface even where no suitable fixed structure is available.

[0063] The portable support 191 comprises a portable base member 192 and a resilient elongate support member 197 having a small degree of flexibility. The portable base member 192 comprises a substantially hollow, closed container having a sealable opening 193 and of substantially pyramid form having a relatively broad foot 194 and a means for supporting the elongate support member 197. As shown in Figure 9, in the embodiment, this means for supporting comprises a recess 195 in the wall of the container adapted to receive and hold the end of the elongate support member 197. The elongate support member 197 may simply comprise a relatively strong

rod or tube of wood or plastics material but is preferably a mechanism of adjustable length.

[0064] In use, the elongate support member 197 is placed within the recess 195, the portable base member 192 is filled with water through the sealable opening which is then sealed by a suitable cap. By virtue of its pyramid shape, the portable base member 192 when filled with water provides a free-standing, stable support capable of supporting the net. The limited flexibility of the elongate support member 197 enables the member to deflect when a ball strikes the net, thereby absorbing a portion of the impact.

[0065] The open end 113 of the net 112 is provided with a tensioning strip in the form of a hem 116. The open end 113 comprises a lower portion and an upper portion. The lower portion is adapted to have the base 121 at least partially overlie the lower portion and be secured by hooks or other retaining means adjacent the rear corners of the base. As mentioned above, the base surface of the rear member 125 incorporates a space 173 adapted to accommodate the tensioning strip of the lower portion of the open end 113.

[0066] The upper portion is adapted to extend above the base from adjacent the rear corners of the base to the flexible frame element 130 substantially above the base, thereby providing side portions of the net adapted to intercept the ball in the event that the ball is mis-hit by the player. The hem 116 of the central section of the upper portion of the open end 113 is adapted to receive the frame element 130 through apertures in the hem 116. In use, by virtue of the tension imposed upon the net 112 by the flexible frame element 130 which is deflected forwardly by the tension provided by the portable support 191, the upper portion of the open end 113, being of substantially curved configuration causes the side portions to adopt an enveloping configuration extending to the uppermost point or part of the frame element 130. This enveloping configuration of the side portions means that the side portions are held clear of the user in a very compact apparatus of limited height. For this reason, the embodiment, is readily usable in domestic environments.

[0067] Prior art designs such as that disclosed in GB 2140311 (Collings) also disclose side portions. However such apparatus have side portions merely as a simple additions to the main enclosure. Such additions are therefore limited in the height above the ground at which they may be attached to the support frame without interfering with swing of the user. Therefore, to provide adequate protection against mis-hit balls with such apparatus, such frames must rise considerably above the height of the user, substantially excluding them from use in domestic environments. At the same time, the added side panels mean that the net cannot be provided from a simple, one piece cylindrical construction and will therefore be more expensive to produce.

[0068] According to a second embodiment, the portable support comprises a support as shown in Figures 10a to 10d, 11, 12 and 13. The support 291 comprises an

attachment member 292 supported from a substantially vertical post 293 supported from the supporting surface by a foot member 294. The support 291 further comprises two stabilizing arms 295 extending sidewardly and rearwardly from the sides of the attachment member 292. Each stabilizing arm 295 is also provided with a foot member 294 to rest on the supporting surface. In the embodiment, each foot member 295 is of substantially hemispherical shape to provide a relatively broad flat base. The stabilizing arms 295 are detachable from the attachment member 292 to facilitate transportation. The attachment member 292 is adapted to support the cup 281 and thereby apply a significant tension to the net to hold it in an extended manner to provide the substantially horn-like shape. It has been found that a portable support in accordance with this design is able to support the net while weighing considerably less than the support of the first embodiment. This is because the sidewardly and rearwardly extending arms 295 distribute the weight of the net rearwardly of the end of the net, while still being clear of the net. In this way the weight of the net cooperates with the weight of the support means to increase the frictional force provided by the feet of the support to the support surface.

[0069] Also, in the second embodiment, the cup 181 of the first embodiment is replaced by a larger receiving bowl 281, as shown in Figures 14 and 15. The bowl 281 comprises an external shell 282 of leather having a base portion 283 and a side portion 284. The net 113 is sewn to the inner side of the side portion 284 to form the closed end of the enclosure. A leather catching wall 285 is also sewn to the inner side of the side portion 284. The wall extremity 286 is positioned to rear of the side portion 284 to provide a circumferential strip 287 to support the catching wall 285. The catching wall 285 is then folded backwards about the circumferential strip 287 to thereby enclose the receiving bowl 281 and provide a space 288 between the catching wall 285 and the external shell 282. This space is substantially filled with pellets of high-density, low-recoil foam. In addition, a plurality of apertures 289 are provided in the base portion 283 to enable air to escape upon the impact of a ball. The apertures are covered by netting on the inner surface of the base portion 283 to prevent escape of the foam. In use, when a ball strikes the leather catching wall 285, the wall 285 is deflected into the foam and tends to thereby compress it. At the same time air is expelled from the space 288 through the apertures 289 to thereby function in a manner similar to a shock-absorber to thereby dissipate energy from the ball. It has been that a receiving bowl according to this embodiment is effective in stopping balls hit even by professional golfers without any significant rebound towards the rear. Rather, the ball will fall to the lower part of the enclosure and roll gently to the base near the feet of the user. This is a major safety improvement over previous designs.

[0070] As a result of the use of the flexible frame element 130, an apparatus for practising ball sports is pro-

vided which has a number of significant advantages over those of the prior art. Firstly, an enclosure is provided which has a very simple design and which is capable of being erected by a very simple procedure, in a way that provides the appropriate level of tension to the enclosure forward of the flexible frame element 130 and to the side portions to the rear of the flexible frame element 130. With the use of the portable support 191, the apparatus may be assembled and used in environments which only provide a clear surface and no other means of support, such as a sports hall or many domestic situations. By virtue of the design, the height of the device may be limited to less than that of an average player, such that it can readily be used in many domestic environments. But more importantly, due to the flexibility of the flexible frame element 130 which is able to move forwardly and sidewardly when a ball strikes the net and resiliently return to its static position, the energy absorbing properties of the apparatus as a whole are greatly enhanced compared with those having a relatively rigid support frame. In particular, it has been found by experience with the apparatus of the embodiments as disclosed in WO 00/02629 that the use of a rigid frame member results in very rapid damage being caused to the net, especially when a ball is struck repeatedly by a powerful hitter. In contrast, the use of the flexible frame element 130 enables the frame element and thus the open end of the net to be deflected forwardly and sidewardly when a ball strikes the net, thereby permitting considerably greater deflection of the net at the point of impact so that the stress on the net at the point of impact is reduced and as a result, the life of the net is prolonged considerably. This also reduces considerably the slight risk of the ball penetrating the net when the net has been used extensively. Nevertheless, due to the resilience of the flexible frame element 130, the net is returned to its original shape ready to receive the next ball. At the same time, the ball is returned to the playing surface adjacent to the feet of the player without requiring the player to take any special action. In addition, the apparatus is considerably lighter than prior art devices which have equivalent characteristics while retaining equivalent strength. Further, by careful design of the interrelationship between the net, the base and the flexible frame element, it has been found possible to form the enclosure from a net of simple cylindrical construction which provides the open end with a lower portion extending from adjacent the rear corners of the base beneath the base and an upper portion which extends from adjacent the rear corners of the base forwardly in an arced arrangement to adjacent the uppermost point of the flexible frame element 130, thereby providing enveloping protective side portions to the enclosure which are inherently kept clear of the user. Such net construction is therefore simple and economical to produce while providing an enclosure configuration that provides the user with the required protection by an apparatus of limited height and which is free-standing, thereby being adapted for use in domestic environments. Finally,

by use of the receiving bowl of the second embodiment there is provided a ball stop which is adapted to dissipate practically all kinetic energy of the ball and prevent it from rebounding to any significant extent.

[0071] Modifications and variations as would be known to the skilled addressee are considered to be within the scope of this invention and it should be appreciated that the present invention need not be limited to the particular scope of the embodiment described above.

[0072] Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

Claims

1. A golf practice device comprising:

a base (121) having a front, a rear and two sides and having a playing surface (126) upon which a person may stand and from which a golf ball may be struck;

an elongate enclosure (111) for catching a golf ball that is struck, the enclosure having a generally conical configuration being formed of a membrane (112) and comprising an open end (113) and a closed end (114) with side walls there-between and having a lower portion of the enclosure extending from the closed end (114) to the base (121);

the open end (113) having a perimeter wherein the perimeter of the open end (113) extends upwardly from each side of a rear portion of the playing surface (126);

a support (191) adapted to support the closed end (114) of the enclosure (111) forward of the base (121);

characterised in that the device further comprises a flexible, resilient, elongate support (130) fixed at each end to the sides of the base (121) and which supports the upper portion of the open end (113) of the enclosure (111); wherein the support (191) which supports the closed end (114) may be adapted to support the closed end (114) of the enclosure (111) forward of the base (121) such that it applies a tension to the enclosure (111) between the closed end (114) and open end (113) to cause the flexible resilient elongate support (130) to flex forwardly such that the perimeter of the open end (113) is inclined forwardly with respect to the base (121).

2. A golf practice device as claimed in claim 1, wherein a segment of the perimeter of the open end (113) underlies the base (121).

3. A golf practice device as claimed in claim 1 or claim 2, wherein the enclosure (111) is formed from a membrane (112) which is formed to have a tubular form wherein the closed end (114) is formed by gathering one end.

4. The device as claimed in any preceding claim, wherein the support (119) that supports the closed end (114) is not connected to the base (121).

5. The device as claimed in any preceding claim, wherein the top of the open end (113) is disposed at a height that is not greater than the height of an average man standing on the playing surface (126).

6. A golf practice device as claimed in any preceding claim, wherein the lower portion is inclined downwardly from the closed end (114) to enable a ball to return to the playing surface (126).

7. A golf practice device as claimed in any preceding claim, wherein the open end extends rearwardly along each side of the base (121) from the elongate support to a position adjacent the rear of the base (121) to thereby define lateral portions rearwardly of the upstanding flexible resilient elongate support (130);

each lateral portion decreasing in height from the upstanding elongate support (130) to adjacent the rear of the base (121).

8. A golf practice device as claimed in any preceding claim, wherein the enclosure (111) is formed of a membrane (112) which, when the device is erected, is able to be deflected when struck by a driven golf ball to thereby absorb a significant proportion of the kinetic energy of the golf ball.

9. The golf practice device of any preceding claim, wherein the flexible resilient elongate support (130) is able to resiliently flex forwardly or sidewardly or both forwardly and sidewardly on said impact.

10. The golf practice device as claimed in any preceding claim, wherein the support (191) that supports the closed end (114) comprises an element adapted to receive a counterweight.

11. The golf practice device as claimed in any preceding claim, wherein the support (191) for the closed end (114) of the enclosure (111) is free-standing and is adapted to support the enclosure above a supporting surface, the support (191) for the closed end (114) comprising contact portions (294) adapted to contact the supporting surface at positions intermediate the base (121) and the closed end (114).

12. The golf practice device as claimed in claim 11,

- wherein the support (191) for the closed end (114) comprises a body (292) and a pair of arms (295), the arms (295) extending from the body (292) to contact the supporting surface at positions intermediate the base (121) and the closed end (114). 5
13. The golf practice device as claimed in claim 12, wherein the arms (295) extend laterally from the body (292) in opposed directions to provide clearance from the enclosure (111). 10
14. The golf practice device as claimed in any preceding claim, wherein the sides of the base (121) converge from the rear to the front. 15
15. The golf practice device as claimed in claim 14, wherein the base (121) is substantially trapezoidal in shape. 20
16. The golf practice device as claimed in any preceding claim, wherein the base (121) comprises a base frame enclosing the playing surface, the base frame comprising a front member (124), a rear member (125) and pair of side members (122,123), wherein the base frame members comprise a plurality of removably interconnected sub-members. 25
17. The golf practice device as claimed in any preceding claim, wherein the closed end (114) comprises an end element (181) adapted to receive and support the membrane (112) at the closed end (114). 30
18. The golf practice device as claimed in claim 17, wherein the end element (181) comprises a deformable material adapted to absorb kinetic energy from a golf ball impacting the end element (181). 35
19. The golf practice device as claimed in claim 18, wherein the end element (181) is formed of a leather material. 40
20. The golf practice device as claimed in any of claims 17 to 19, wherein the membrane (112) is supported by the side of the end element (181). 45
21. The golf practice device as claimed in any of claims 17 to 20, wherein energy-absorbing material is associated with the end element (181). 50
22. The golf practice device as claimed in claim 21, wherein the energy-absorbing material is situated within a space enclosed by the end element (181) and a deformable membrane (183) adapted to be struck by the ball. 55
23. The golf practice device as claimed in claim 21 or 22, wherein the energy-absorbing material comprises high-density, low-recoil foam pellets.

24. The golf practice device as claimed in claims 22 or 23, wherein the end element (181) further comprises apertures (289) adapted to permit the release of air from the space enclosed by the end element (181) and the deformable membrane (183).

25. The golf practice device as claimed in any of claims 17 to 24, wherein the end element (181) comprises a cup-like element.

26. The golf practice device as claimed in claim 2 and any of claims 3 to 25, when dependent directly or indirectly upon claim 2, wherein said segment which underlies the base (121) is supported by a further resiliently flexible elongate member received in the segment and fixed at its ends to the sides of the base (121) and said second elongate member being resiliently bent to an arcuate configuration to extend rearwardly away from the forward edge.

Patentansprüche

1. Golfübungsvorrichtung, umfassend:

ein Grundelement (121) mit einer Vorderseite, einer Hinterseite und zwei Seiten, das eine Spielfläche (126) aufweist, auf der eine Person stehen kann und von der aus ein Golfball geschlagen werden kann;

eine gestreckte Umhüllung (111) zum Auffangen eines geschlagenen Golfballs, wobei die Umhüllung eine im Allgemeinen konische Anordnung aufweist, die von einer Membran (112) gebildet wird und ein offenes Ende (113) und ein geschlossenes Ende (114) mit Seitenwänden dazwischen umfasst, und einen unteren Abschnitt der Umhüllung aufweist, der vom geschlossenen Ende (114) zum Grundelement (121) verläuft;

wobei das offene Ende (113) eine äußere Begrenzung aufweist, wobei die äußere Begrenzung des offenen Endes (113) von jeder Seite eines hinteren Abschnitts der Spielfläche (126) aus nach oben verläuft;

einen Halter (191), der dafür eingerichtet ist, das geschlossene Ende (114) der Umhüllung (111) vor dem Grundelement (121) zu halten;

dadurch gekennzeichnet, dass die Vorrichtung ferner eine flexible elastische längliche Stütze (130) umfasst, die an jedem Ende an den Seiten des Grundelements (121) befestigt ist und die den oberen Abschnitt des offenen Endes (113) der Umhüllung (111) trägt;

wobei der Halter (191), der das geschlossene Ende (114) hält, dafür eingerichtet sein kann, das geschlossene Ende (114) der Umhüllung (111) vor dem Grundelement (121) zu halten,

- sodass er die Umhüllung (111) zwischen dem geschlossenen Ende (114) und dem offenen Ende (113) spannt, damit sich die flexible elastische längliche Stütze (130) derart nach vorn biegt, dass die äußere Begrenzung des offenen Endes (113) in Bezug auf das Grundelement (121) nach vorn geneigt ist.
2. Golfübungsvorrichtung nach Anspruch 1, wobei ein Segment der äußeren Begrenzung des offenen Endes (113) unter dem Grundelement (121) liegt.
 3. Golfübungsvorrichtung nach Anspruch 1 oder Anspruch 2, wobei die Umhüllung (111) von einer Membran (112) gebildet wird, die so geformt ist, dass sie röhrenförmig geformt ist, wobei das geschlossene Ende (114) **dadurch** gebildet wird, dass ein Ende zusammengezogen wird.
 4. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei der Halter (191), der das geschlossene Ende (114) hält, nicht mit dem Grundelement (121) verbunden ist.
 5. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei die Oberseite des offenen Endes (113) in einer Höhe angeordnet ist, die nicht höher als die Größe einer durchschnittlichen Person ist, die auf der Spielfläche (126) steht.
 6. Golfübungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei der untere Abschnitt vom geschlossenen Ende (114) aus nach unten geneigt ist, damit ein Ball auf die Spielfläche (126) zurückgelangen kann.
 7. Golfübungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei das offene Ende von der länglichen Stütze aus zu einer Stelle angrenzend an die Hinterseite des Grundelements (121) entlang jeder Seite des Grundelements (121) nach hinten verläuft, um **dadurch** seitliche Abschnitte hinter der stehenden flexiblen elastischen länglichen Stütze (130) zu definieren; wobei die Höhe jedes seitlichen Abschnitts von der stehenden länglichen Stütze (130) aus bis zu der Stelle angrenzend an die Hinterseite des Grundelements (121) abnimmt.
 8. Golfübungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei die Umhüllung (111) von einer Membran (112) gebildet wird, die sich, wenn die Vorrichtung aufgestellt ist, wölben kann, wenn sie von einem geschlagenen Golfball getroffen wird, um **dadurch** einen erheblichen Anteil der kinetischen Energie des Golfballs zu absorbieren.
 9. Golfübungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei sich die flexible elastische längliche Stütze (130) beim Auftreffen elastisch nach vorn oder zur Seite oder sowohl nach vorn als auch zur Seite biegen kann.
 10. Golfübungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei der Halter (191), der das geschlossene Ende (114) hält, ein Element umfasst, das dafür eingerichtet ist, ein Gegengewicht aufzunehmen.
 11. Golfübungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei der Halter (191) für das geschlossene Ende (114) der Umhüllung (111) frei steht und dafür eingerichtet ist, die Umhüllung über einer Auflagefläche zu halten, wobei der Halter (191) für das geschlossene Ende (114) Kontaktabschnitte (294) umfasst, die dafür eingerichtet sind, die Auflagefläche an Stellen zwischen dem Grundelement (121) und dem geschlossenen Ende (114) zu berühren.
 12. Golfübungsvorrichtung nach Anspruch 11, wobei der Halter (191) für das geschlossene Ende (114) einen Körper (292) und ein Paar von Armen (295) umfasst, wobei die Arme (295) vom Körper (292) weg verlaufen, um die Auflagefläche an Stellen zwischen dem Grundelement (121) und dem geschlossenen Ende (114) zu berühren.
 13. Golfübungsvorrichtung nach Anspruch 12, wobei die Arme (295) vom Körper (292) aus seitlich in entgegengesetzte Richtungen verlaufen, um einen Abstand zur Umhüllung (111) bereitzustellen.
 14. Golfübungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei die Seiten des Grundelements (121) von der Hinterseite zur Vorderseite zusammenlaufen.
 15. Golfübungsvorrichtung nach Anspruch 14, wobei das Grundelement (121) im Wesentlichen trapezförmig ist.
 16. Golfübungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei das Grundelement (121) einen Grundelementrahmen aufweist, der die Spielfläche umschließt, wobei der Grundelementrahmen ein vorderes Element (124), ein hinteres Element (125) und ein Paar Seitenelemente (122, 123) umfasst, wobei die Grundelementrahmenelemente eine Vielzahl von lösbar miteinander verbundenen Teilelementen umfassen.
 17. Golfübungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei das geschlossene Ende (114) ein Endelement (181) umfasst, das dafür eingerichtet ist, die Membran (112) am geschlossenen

Ende (114) aufzunehmen und zu halten.

18. Golfübungsvorrichtung nach Anspruch 17, wobei das Endelement (181) ein verformbares Material umfasst, das dafür eingerichtet ist, kinetische Energie eines Golfballs zu absorbieren, der auf das Endelement (181) auftrifft. 5
19. Golfübungsvorrichtung nach Anspruch 18, wobei das Endelement (181) aus einem Ledermaterial hergestellt ist. 10
20. Golfübungsvorrichtung nach einem der Ansprüche 17 bis 19, wobei die Membran (112) von der Seite des Endelements (181) gehalten wird. 15
21. Golfübungsvorrichtung nach einem der Ansprüche 17 bis 20, wobei energieabsorbierendes Material mit dem Endelement (181) in Verbindung steht. 20
22. Golfübungsvorrichtung nach Anspruch 21, wobei sich das energieabsorbierende Material in einem Raum befindet, der vom Endelement (181) und einer verformbaren Membran (183) umschlossen wird, die dafür eingerichtet ist, vom Ball getroffen zu werden. 25
23. Golfübungsvorrichtung nach Anspruch 21 oder 22, wobei das energieabsorbierende Material hochdichte Schaumkügelchen mit geringem Rückstellvermögen umfasst. 30
24. Golfübungsvorrichtung nach Anspruch 22 oder 23, wobei das Endelement (181) ferner Öffnungen (289) umfasst, die dafür eingerichtet sind, Luft aus dem Raum, der vom Endelement (181) und der verformbaren Membran (183) umschlossen wird, entweichen zu lassen. 35
25. Golfübungsvorrichtung nach einem der Ansprüche 17 bis 24, wobei das Endelement (181) ein tassenähnliches Element umfasst. 40
26. Golfübungsvorrichtung nach Anspruch 2 und einem der Ansprüche 3 bis 25, wenn er direkt oder indirekt von Anspruch 2 abhängt, wobei das Segment, das unter dem Grundelement (121) liegt, von einem weiteren elastisch flexiblen länglichen Element gehalten wird, das in dem Segment aufgenommen und an seinen Enden an den Seiten des Grundelements (121) befestigt ist, und wobei das zweite längliche Element elastisch in eine gebogene Anordnung gebogen ist, damit es von der vorderen Kante aus nach hinten weg verläuft. 45 50

Revendications

1. Dispositif d'entraînement de golf, comprenant :

une base (121) ayant une partie avant, une partie arrière et deux côtés et ayant une surface de jeu (126) sur laquelle une personne peut se tenir debout et à partir de laquelle une balle de golf peut être frappée ;
un boîtier allongé (111) pour récupérer une balle de golf qui est frappée, le boîtier ayant une configuration généralement conique qui est formée avec une membrane (112) et comprenant une extrémité ouverte (113) et une extrémité fermée (114) avec des parois latérales entre elles et ayant une partie inférieure du boîtier qui s'étend de l'extrémité fermée (114) à la base (121) ; l'extrémité ouverte (113) ayant un périmètre dans lequel le périmètre de l'extrémité ouverte (113) s'étend vers le haut à partir de chaque côté d'une partie arrière de la surface de jeu (126) ; un support (191) adapté pour supporter l'extrémité fermée (114) du boîtier (111) vers l'avant de la base (121) ;

caractérisé en ce que le dispositif comprend en outre un support allongé, élastique et flexible (130) fixé au niveau de chaque extrémité aux côtés de la base (121) et qui supporte la partie supérieure de l'extrémité ouverte (113) du boîtier (111) ;
dans lequel le support (191) qui supporte l'extrémité fermée (114) peut être adapté pour supporter l'extrémité fermée (114) du boîtier (111) vers l'avant de la base (121) de sorte qu'il applique une tension sur le boîtier (111) entre l'extrémité fermée (114) et l'extrémité ouverte (113) pour amener le support allongé, élastique et flexible (130) à fléchir vers l'avant de sorte que le périmètre de l'extrémité ouverte (113) est incliné vers l'avant par rapport à la base (121).

2. Dispositif d'entraînement de golf selon la revendication 1, dans lequel un segment du périmètre de l'extrémité ouverte (113) est à la base de la base (121).
3. Dispositif d'entraînement de golf selon la revendication 1 ou la revendication 2, dans lequel le boîtier (111) est formé à partir d'une membrane (112) qui est formée pour avoir une forme tubulaire, dans lequel l'extrémité fermée (114) est formée en rassemblant une extrémité.
4. Dispositif selon l'une quelconque des revendications précédentes, dans lequel le support (119) qui supporte l'extrémité fermée (114) n'est pas raccordé à la base (121).
5. Dispositif selon l'une quelconque des revendications

précédentes, dans lequel la partie supérieure de l'extrémité ouverte (113) est disposée à une hauteur qui n'est pas supérieure à la hauteur d'un homme de taille moyenne debout sur la surface de jeu (126).

6. Dispositif d'entraînement de golf selon l'une quelconque des revendications précédentes, dans lequel la partie inférieure est inclinée vers le bas à partir de l'extrémité fermée (114) pour permettre à la balle de revenir vers la surface de jeu (126).
7. Dispositif d'entraînement de golf selon l'une quelconque des revendications précédentes, dans lequel l'extrémité ouverte s'étend vers l'arrière le long de chaque côté de la base (121) à partir du support allongé jusqu'à une position adjacente à l'arrière de la base (121) pour définir ainsi des parties latérales vers l'arrière du support allongé, élastique et flexible (130) droit ;
chaque partie latérale diminuant du point de vue de la hauteur du support allongé (130) droit jusqu'à une position adjacente à l'arrière de la base (121).
8. Dispositif d'entraînement de golf selon l'une quelconque des revendications précédentes, dans lequel le boîtier (111) est formé avec une membrane (112) qui, lorsque le dispositif est redressé, peut être déviée lorsqu'elle est frappée par une balle de golf entraînée pour absorber ainsi une proportion significative de l'énergie cinétique de la balle de golf.
9. Dispositif d'entraînement de golf selon l'une quelconque des revendications précédentes, dans lequel le support allongé, élastique et flexible (130) peut fléchir de manière élastique vers l'avant ou latéralement ou bien à la fois vers l'avant et latéralement suite au dit impact.
10. Dispositif d'entraînement de golf selon l'une quelconque des revendications précédentes, dans lequel le support (191) qui supporte l'extrémité fermée (114) comprend un élément adapté pour recevoir un contrepoids.
11. Dispositif d'entraînement de golf selon l'une quelconque des revendications précédentes, dans lequel le support (191) pour l'extrémité fermée (114) du boîtier (111) est indépendant et est adapté pour supporter le boîtier au-dessus d'une surface de support, le support (191) pour l'extrémité fermée (114) comprenant des parties de contact (294) adaptées pour entrer en contact avec la surface de support à des positions situées entre la base (121) et l'extrémité fermée (114).
12. Dispositif d'entraînement de golf selon la revendication 11, dans lequel le support (191) pour l'extrémité fermée (114) comprend un corps (292) et une paire

de bras (295), les bras (295) s'étendant à partir du corps (292) pour entrer en contact avec la surface de support à des positions situées entre la base (121) et l'extrémité fermée (114).

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13. Dispositif d'entraînement de golf selon la revendication 12, dans lequel les bras (295) s'étendent latéralement à partir du corps (292) dans des directions opposées pour fournir du jeu à partir du boîtier (111).

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14. Dispositif d'entraînement de golf selon l'une quelconque des revendications précédentes, dans lequel les côtés de la base (121) convergent de l'arrière vers l'avant.

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15. Dispositif d'entraînement de golf selon la revendication 14, dans lequel la base (121) a une forme sensiblement trapézoïdale.

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16. Dispositif d'entraînement de golf selon l'une quelconque des revendications précédentes, dans lequel la base (121) comprend un châssis de base enfermant la surface de jeu, le châssis de base comprenant un élément avant (124), un élément arrière (125) et une paire d'éléments latéraux (122, 123), dans lequel les éléments de châssis de base comprennent une pluralité de sous-éléments interconnectés de manière amovible.

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17. Dispositif d'entraînement de golf selon l'une quelconque des revendications précédentes, dans lequel l'extrémité fermée (114) comprend un élément d'extrémité (181) adapté pour recevoir et supporter la membrane (112) au niveau de l'extrémité fermée (114).

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18. Dispositif d'entraînement de golf selon la revendication 17, dans lequel l'élément d'extrémité (181) comprend un matériau déformable adapté pour absorber l'énergie cinétique provenant d'une balle de golf qui heurte l'élément d'extrémité (181).

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19. Dispositif d'entraînement de golf selon la revendication 18, dans lequel l'élément d'extrémité (181) est formé à partir d'un matériau en cuir.

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20. Dispositif d'entraînement de golf selon l'une quelconque des revendications 17 à 19, dans lequel la membrane (112) est supportée par le côté de l'élément d'extrémité (181).

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21. Dispositif d'entraînement de golf selon l'une quelconque des revendications 17 à 20, dans lequel le matériau d'absorption d'énergie est associé à l'élément d'extrémité (181).

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22. Dispositif d'entraînement de golf selon la revendication 21, dans lequel le matériau d'absorption d'éner-

gie est situé dans un espace enfermé par l'élément d'extrémité (181) et une membrane déformable (183) adaptée pour être frappée par la balle.

- 23.** Dispositif d'entraînement de golf selon la revendication 21 ou 22, dans lequel le matériau d'absorption d'énergie comprend des pastilles de mousse haute densité à faible recul. 5
- 24.** Dispositif d'entraînement de golf selon la revendications 22 ou 23, dans lequel l'élément d'extrémité (181) comprend en outre des ouvertures (289) adaptées pour permettre la libération de l'air par l'espace enfermé par l'élément d'extrémité (181) et la membrane déformable (183), 10 15
- 25.** Dispositif d'entraînement de golf selon l'une quelconque des revendications 17 à 24, dans lequel l'élément d'extrémité (181) comprend un élément en forme de coupelle. 20
- 26.** Dispositif d'entraînement de golf selon la revendication 2 et l'une quelconque des revendications 3 à 25, lorsqu'elle dépend directement ou indirectement de la revendication 2, dans lequel ledit segment qui est 25 à la base de la base (121) est supporté par un autre élément flexible, élastique reçu dans le segment et fixé au niveau de ses extrémité aux côtés de la base (121) et ledit second élément allongé étant fléchi de manière élastique jusqu'à une configuration arquée 30 pour s'étendre vers l'arrière à distance du bord avant.

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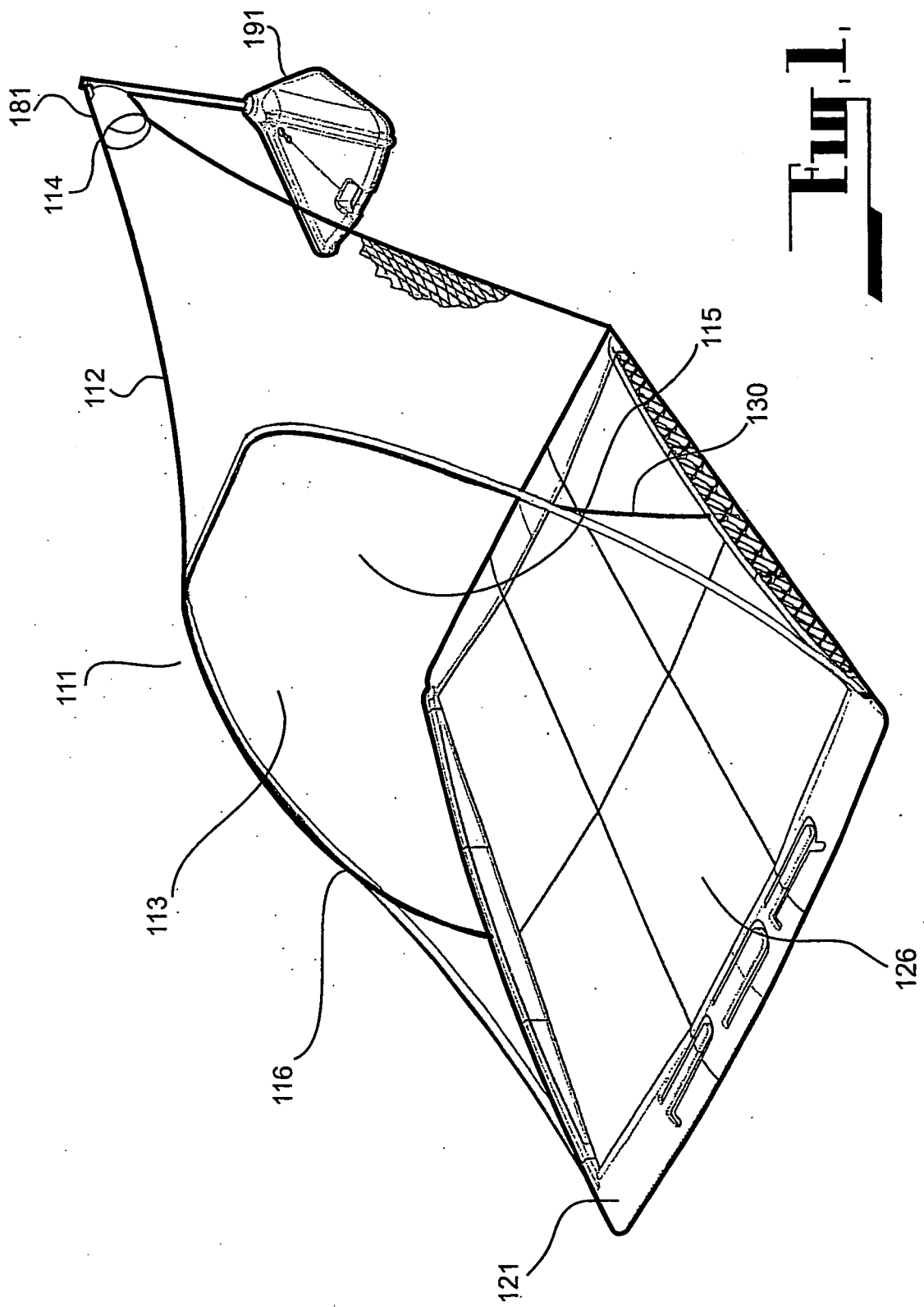
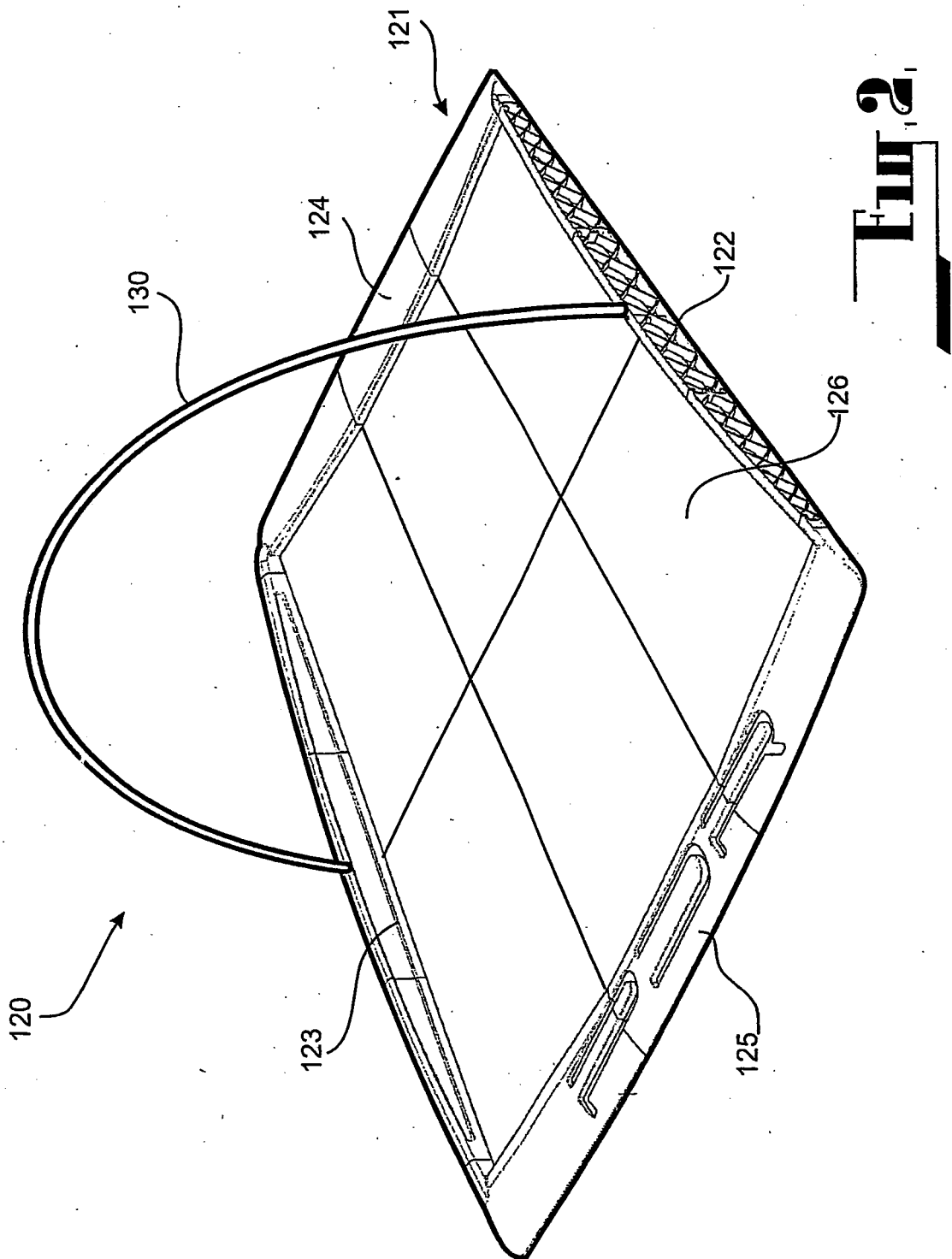


Fig. 1



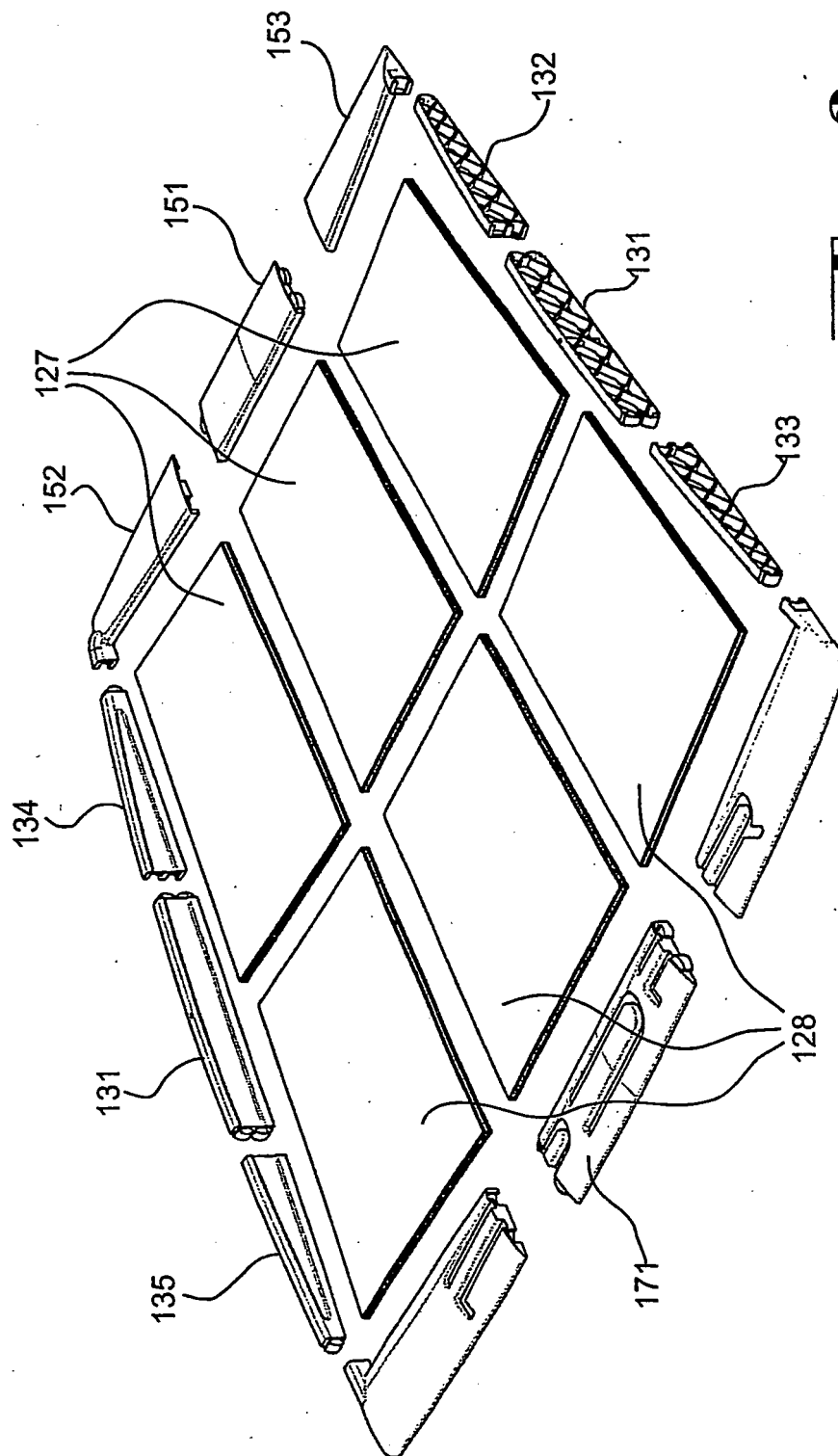
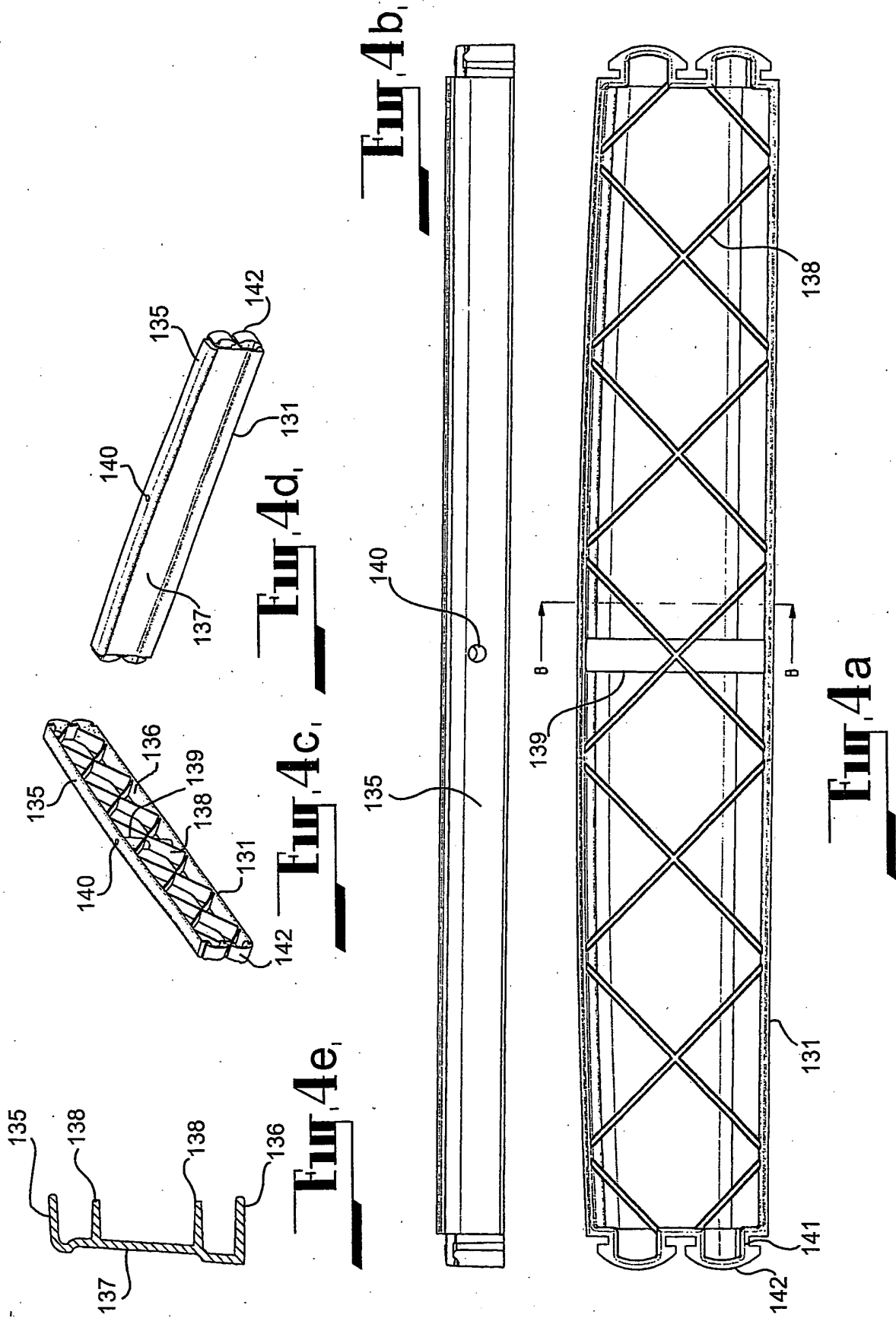
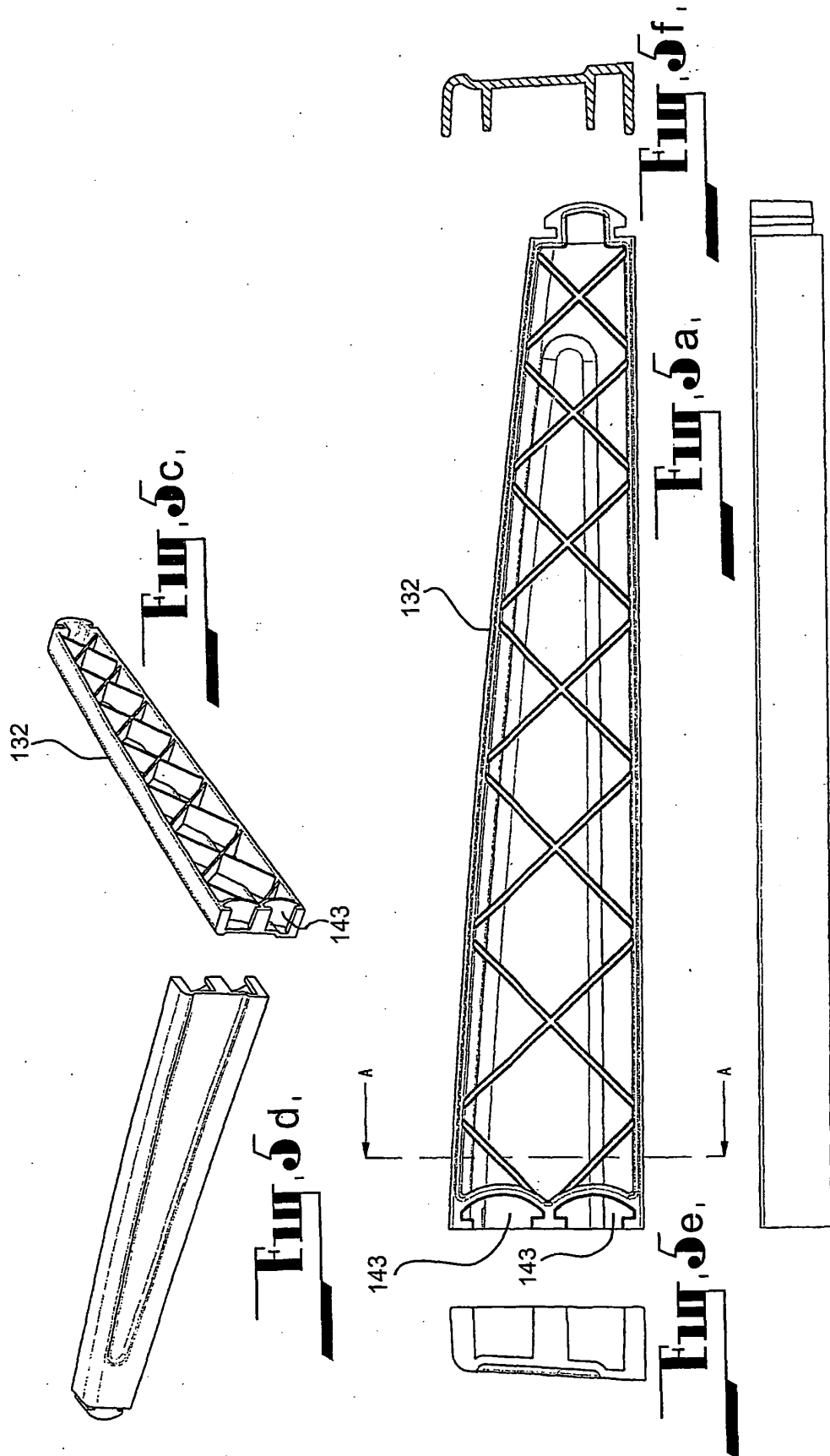
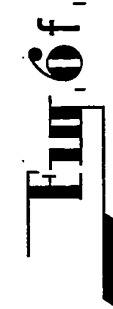
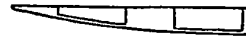
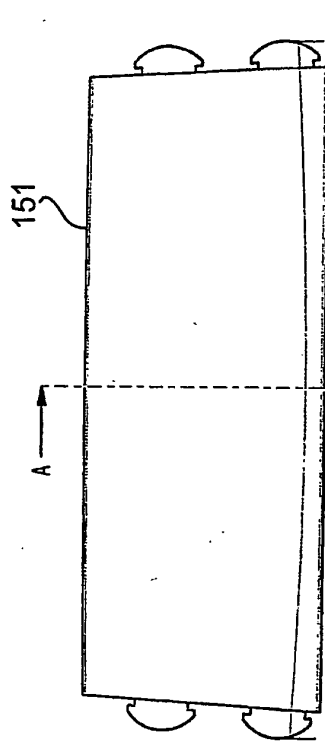
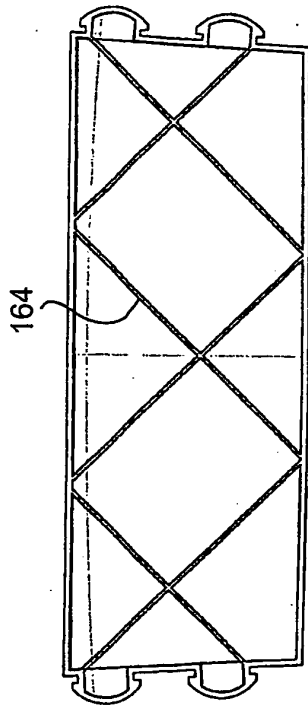
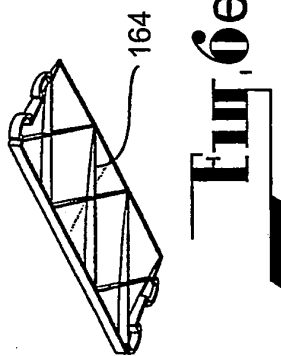
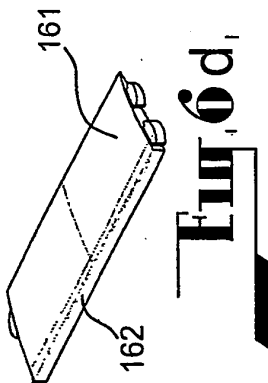
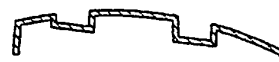
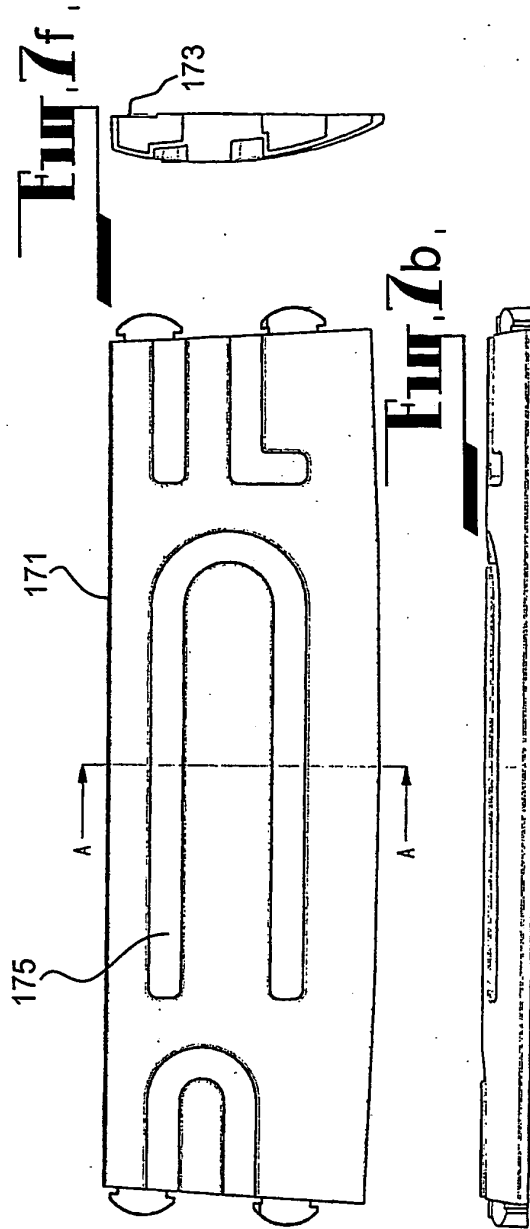
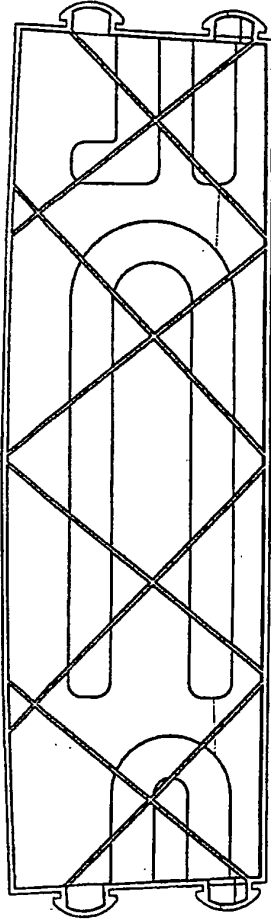
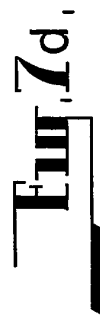
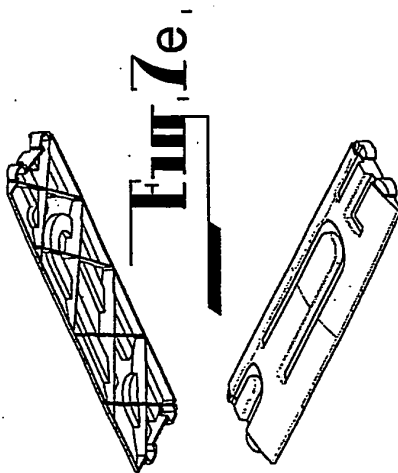


Fig. 3









SECTION A-A

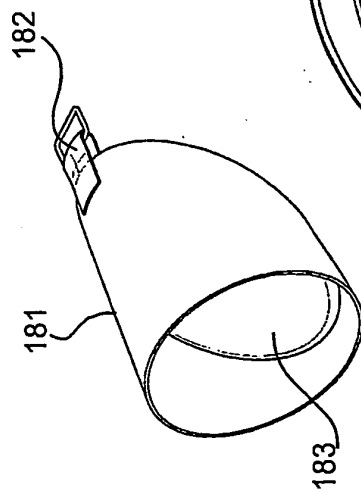


Fig. 8b,

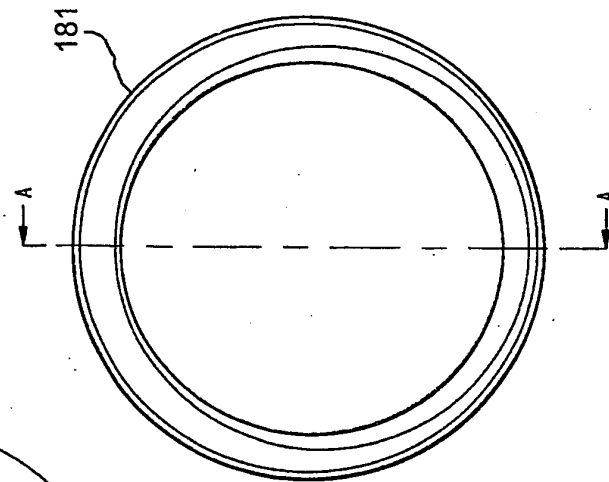


Fig. 8a,

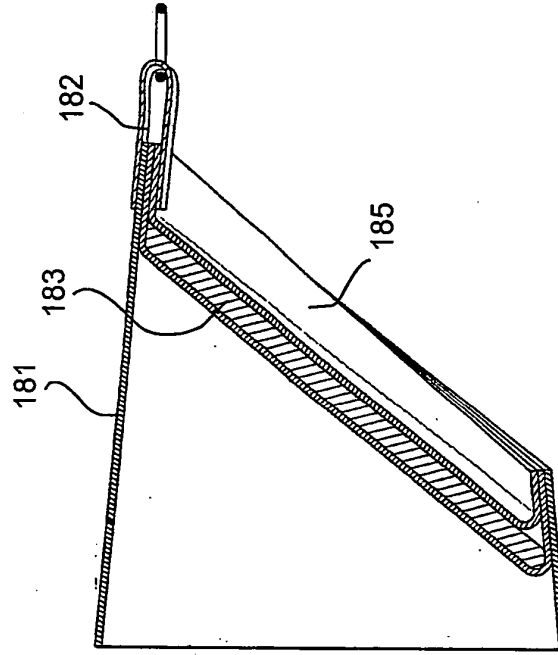


Fig. 8c,

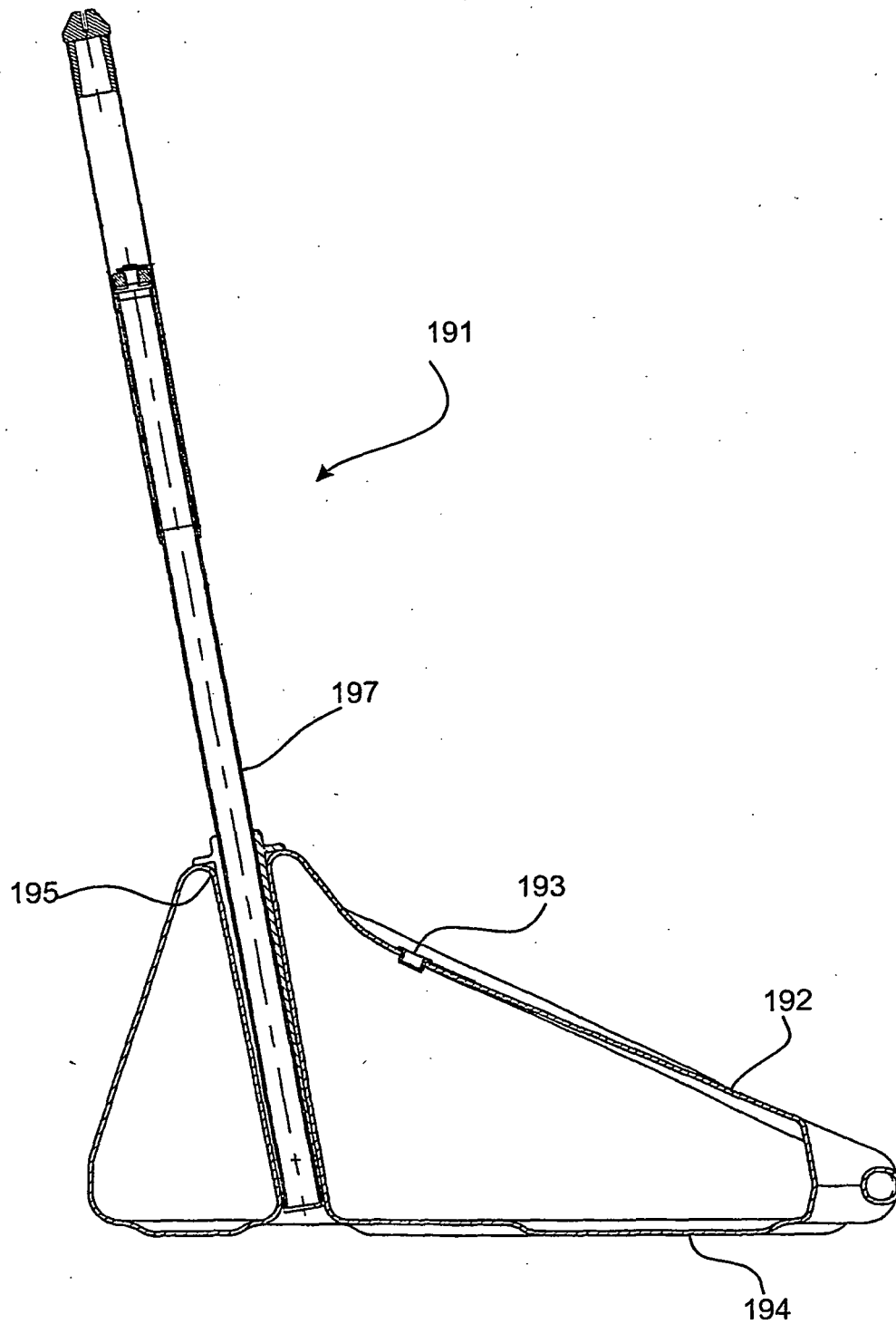
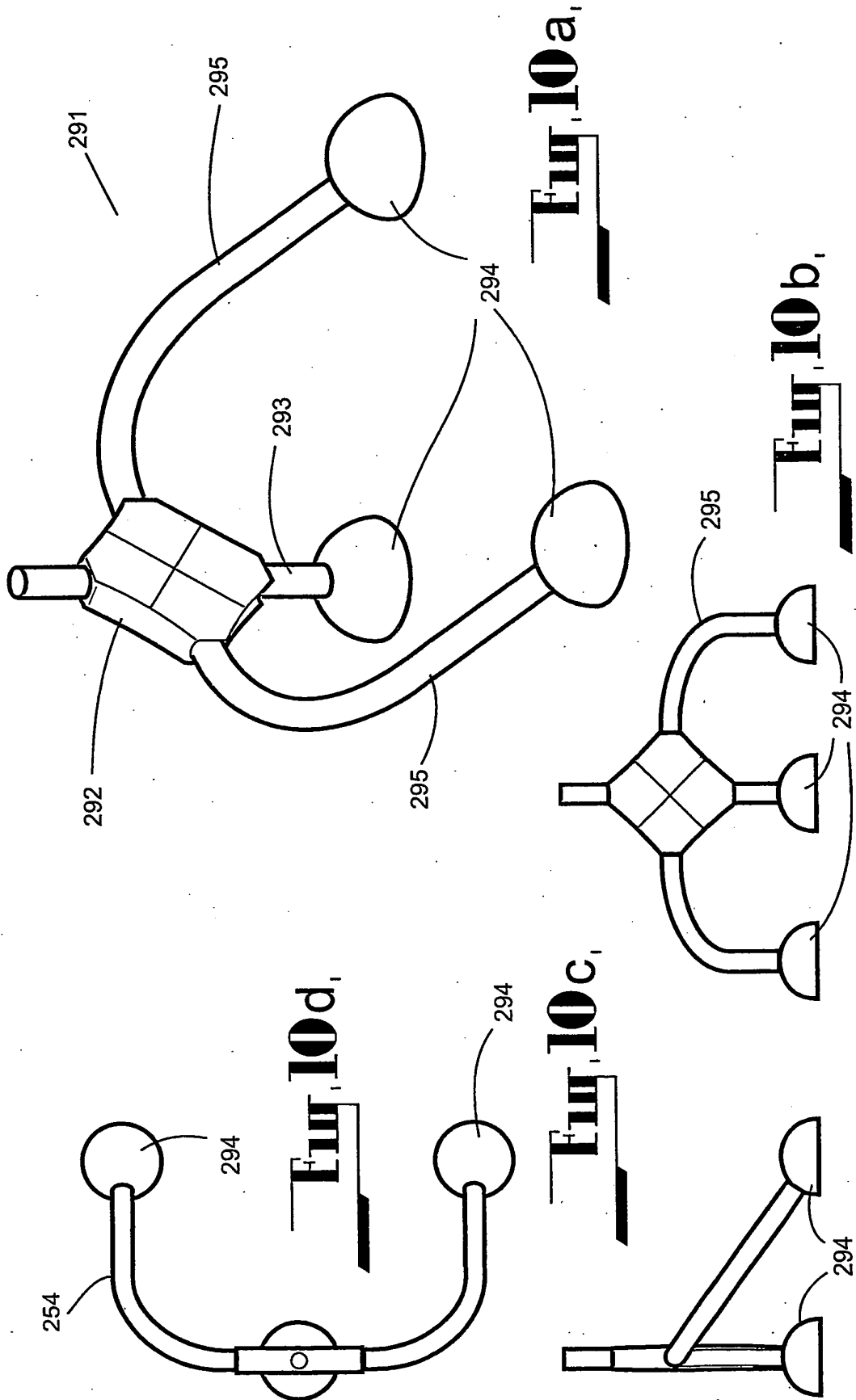


Fig. 9



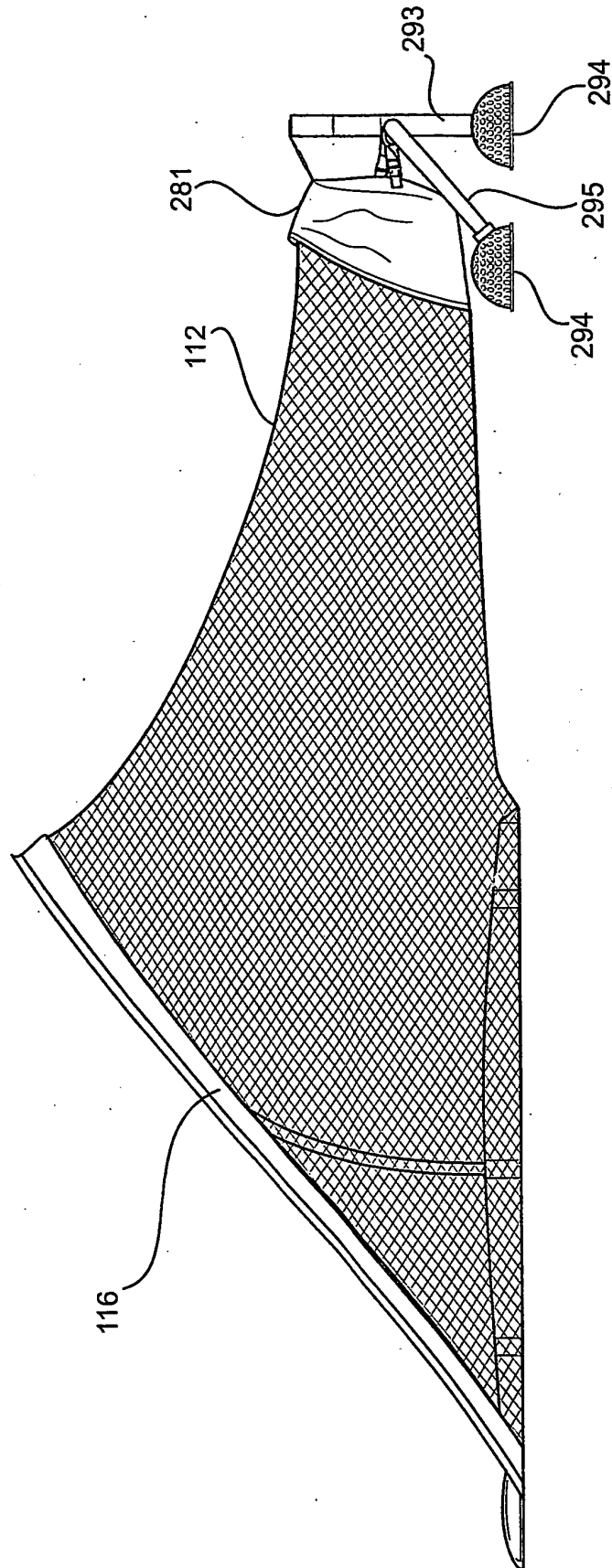


Fig. 11.

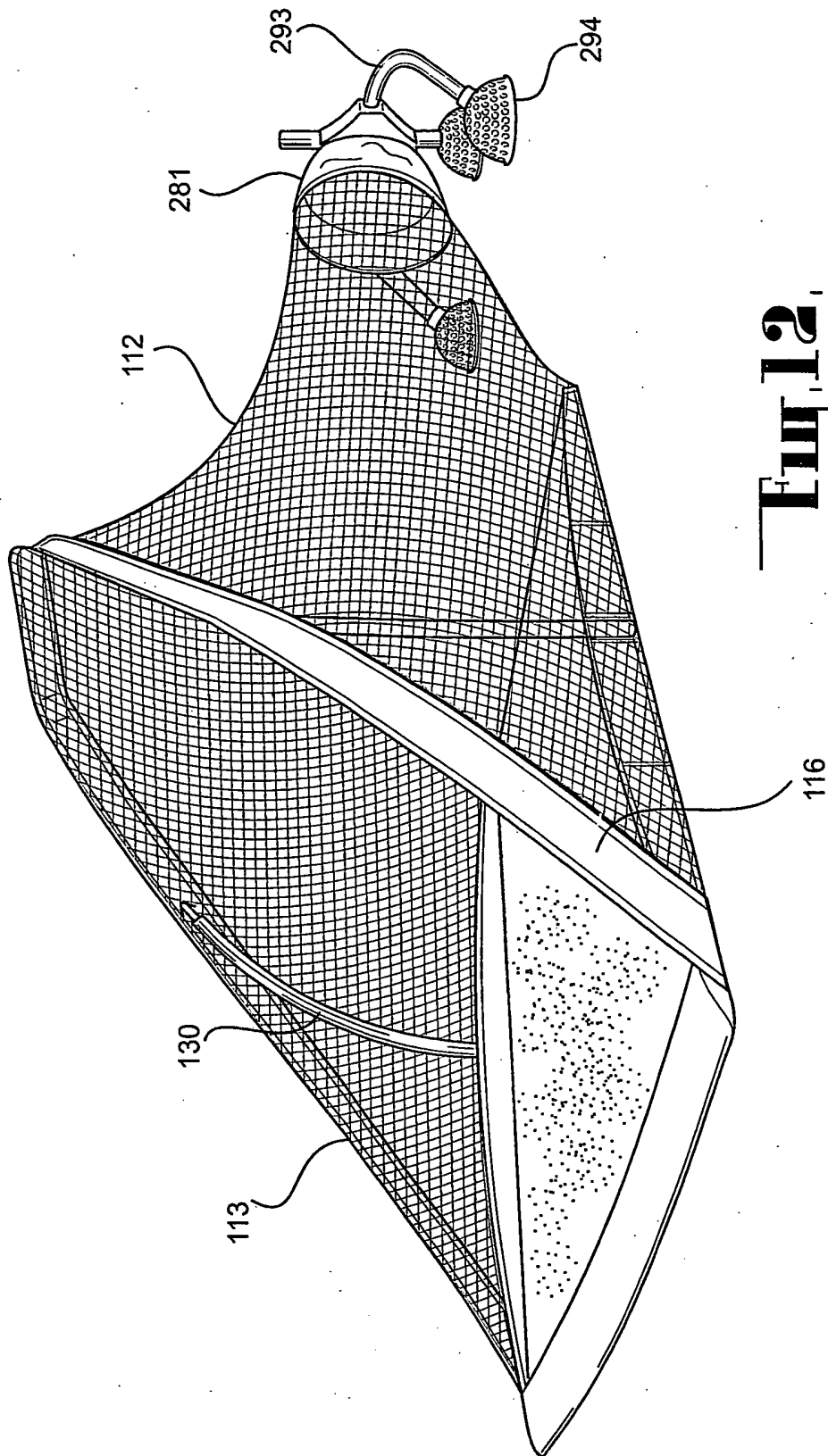


Fig. 12

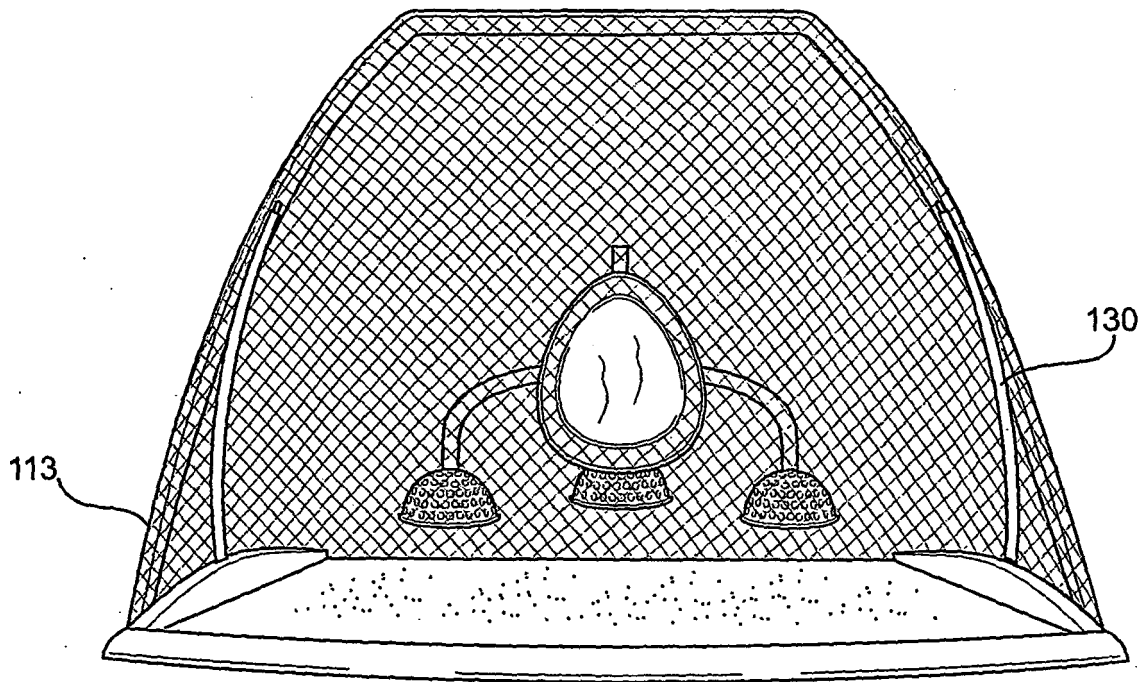


Fig. 13.

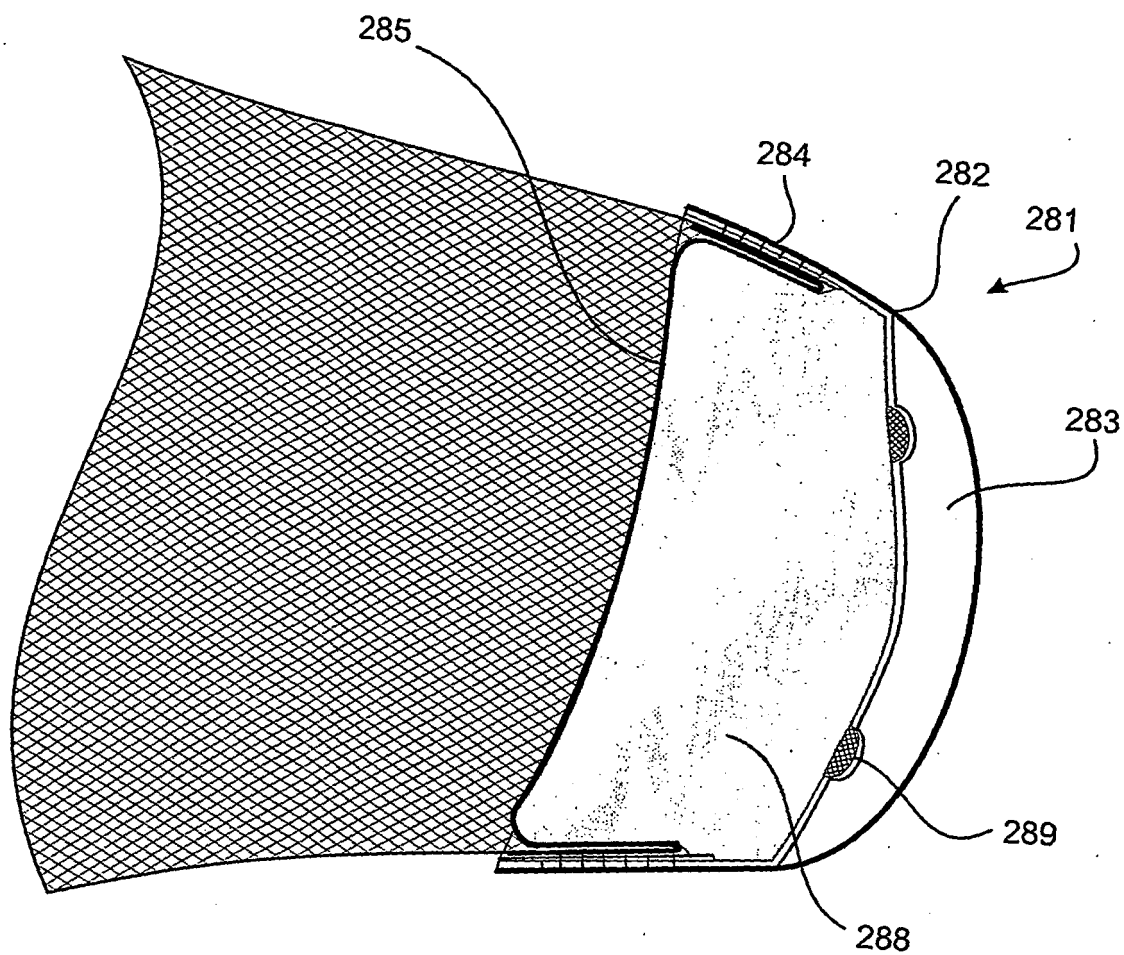


Fig. 14,

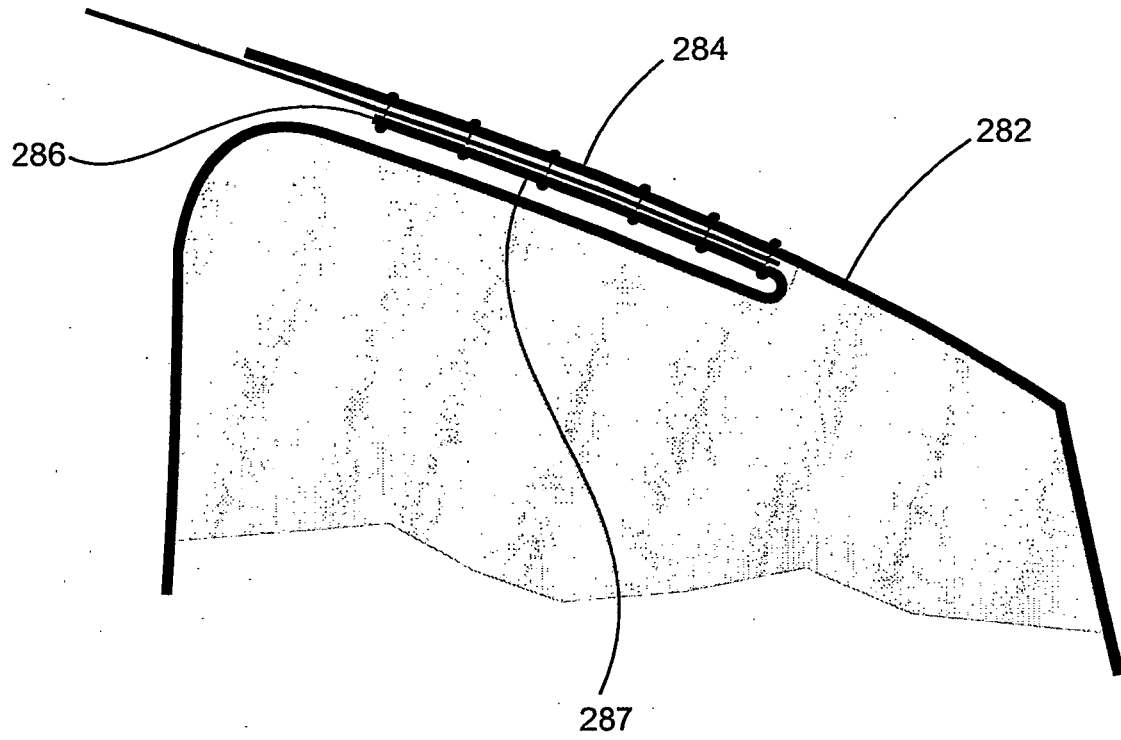


Fig. 15.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 5018731 A, Doyle [0004]
- US 4556219 A, Tillery [0004]
- GB 2140311 A, Collings [0004] [0067]
- WO 0002629 A [0005] [0062] [0070]