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(54) Golf practice and exercise device

(57) A large, resilient, hollow ball, of a size between that of a softball and a basketball, preferably a soccer ball or a volleyball, having a vent that allows restricted exit of air upon the ball being struck by a golf club and allows air to re-enter the hollow interior upon reflexing of the ball after being struck by a golf club. The ball may be combined with a target assembly that serves to return the ball to the striking position at which it has been struck.

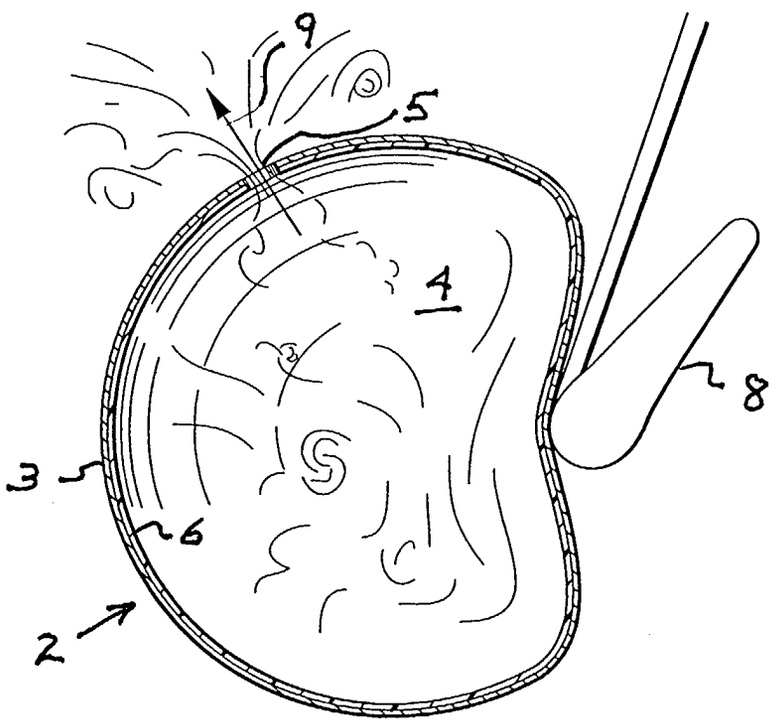


Fig. 11

EP 1 354 613 A1

Description

REFERENCE TO EARLIER APPLICATION

[0001] This is a continuation-in-part of my co-pending U.S. Patent Application Serial No. 09/748,046, filed December 22, 2000 for GOLF PRACTICE SYSTEM.

FIELD OF THE INVENTION

[0002] The present invention relates to golf practice and exercise devices that improve the user's golf swing and develop the muscles used in a golf swing.

BACKGROUND OF THE INVENTION

[0003] There are many prior devices that have been developed for golfers to practice to improve their swing. One type suspends a golf ball-sized object from the end of a cord in a position for being struck by the head of a golf club being swung by a golfer. Such devices allow a golfer to practice his swing and improve the technique and path of a swing in a confined space instead of having to use a driving range. However, the object being struck is a golf ball or the size of a golf ball and, therefore, provides little muscle-building resistance.

[0004] In my prior application, Serial No. 09/444,120, an object is suspended by a rope from a frame arm or tethered to a rope anchored in the ground in position for being struck by the head of a golf club being swung by a golfer. The object has an impact surface approaching the size of or greater than the corresponding surface of a standard softball and has a mass approaching that of or exceeding that of a standard softball. This device provides for practicing the technique of the golf swing, as well as providing muscle development to enhance the striking force exerted by the golfer when striking a golf ball. However, the object is restricted by the rope so that the distance traveled by the object is extremely limited, thereby preventing the golfer from observing the ball in flight to determine the correctness of his swing.

[0005] Another type of practice device is a relatively large bag known as an Impact Bag that is intended to be filled with soft material, such as towels, and is placed against a stationary object that prevents displacement of the bag. Such a device is intended to stop a practice swing at the point of impact so that the golfer can evaluate the club's and his body's positions at impact. It does not allow the golfer to complete the follow-through of a golf swing and to perform a muscle building exercise by overcoming the resistance of a weight as the club moves through impact into the follow-through.

[0006] Yet another type of practice device, disclosed in U.S. Patent No. 3,721,447, uses a contact engaging textile material pad adhered to a conventional golf club face in combination with a similarly covered ball sized similarly to a standard golf ball. The pad is marked with lines. When the golf club is swung and contacts the ball, the ball releasably adheres to the club face and the golfer can see by the lines marked on the pad the possible travel of the ball, thus determining the correctness of the swing. This device does not offer any muscle building exercises. Furthermore, this device does not allow the golfer to have visual confirmation of the travel of the ball, the markings on the pad provide an approximation of the travel of the struck golf ball.

[0007] In U.S. Patent Application Serial No. 09/748,046 of which the present application is a continuation-in-part, there is disclosed and claimed a golf practice and exercise system that provides a combination of practicing techniques for controlling the direction of flight of the golf ball as well as building the muscles used in swinging a golf club. In doing this, it allows the golfer to watch the travel path of the practice ball, thereby confirming the consequence of each practice swing. A target assembly limits the distance the practice ball travels so a golfer can use the system in a confined space, if desired. Also, the practice ball is of the size and mass that provides significant resistance to the golf swing, thereby providing the golfer with a muscle building exercise that increases the golf swing power.

[0008] The present invention provides a further feature for a golf practice and exercise device that can be used with the aforementioned system of the parent application, or by itself, or in other combinations. This further feature involves the use of a large, resilient, hollow, vented object that is intended to be struck by a golf club swung by a golfer and is sufficiently resilient to flex inwardly when struck and re-flexed to its original shape after being struck, thus avoiding undue strain on the golfer in comparison with striking a hard, non-resilient object, while it provides sufficient restriction for exercise and strength building. The object will absorb a substantial amount of the shock resulting from the object being struck by a golf club and yet will result in sufficient impact to force the muscles of the golfer to learn the correct swing. In comparison, hitting a small and lightweight golf ball, results in the golfer not experiencing sufficient resistance to cause muscular memory development. Being of substantial size greater than a golf ball, relieves the golfer of focusing on hitting a small object like a golf ball. Rather the golfer can focus on his swing rather than precisely hitting a golf ball.

[0009] The object is preferably the size of a softball, soccer ball, volleyball or basketball or other size in the range of a softball to a basketball. The vent opening extends from the hollow interior to allow exit of air under the force of a golf striking the object, with the opening being of a size that restricts the exit of air so that there is desired resistance to impose desired impact strain on the golfer and to limit the flexing so that the object will resiliently reflex to its original shape while air reenters the object.

[0010] A compound safety ball with holes in an outer wall is disclosed in U.S. Patent No. 6,012,997. This ball has an inner shell that resiliently rebounds in an air

space within the outer wall to provide aerodynamic and impact characteristics. However, the plurality of holes allows substantially free flow in and out of the space, which is occupied primarily by the inner shell, and the purpose of the holes is to allow air flow during flight rather than allowing restricted air flow out of and into a hollow interior in response to the ball being struck. Further, the ball is not enlarged in relation to a conventional ball. Thus, this patent does not teach or suggest the present invention, being more in the nature of a modified "Wiffle" ball, to which it makes specific reference.

SUMMARY OF THE PRESENT INVENTION

[0011] Briefly described, the golf practice and exercise device of the present invention comprises a hollow object at least as large as a conventional softball up to at least the size of a conventional basketball, preferably the size of a soccer ball or volleyball. The object has a resilient outer wall that defines a hollow interior. The outer wall has a vent opening therethrough to allow restricted air flow out of the hollow interior upon inward flexing of the resilient outer wall when the object is struck by a golf club, and to allow air to re-enter the hollow interior when the resilient outer wall reflexes to its original shape following being struck by a golf club.

[0012] The object is preferably spherical and has an outer wall of a material substantially the same as the outer wall of a conventional soccer ball, volleyball or basketball.

[0013] In the form of a ball, the object may have a diameter in the range of 85 mm to 300 mm and preferably 170 mm to 190 mm. The vent is preferably in the range of 4 mm to 10 mm.

[0014] In the spherical form, the object can be combined with a target assembly against which the object is propelled after being struck from a striking position that is a sufficient distance from the target assembly that when the spherical object is struck by a golf club swung by a golfer it travels in a direction imposed by the golfer's swing, whereby the golfer can practice control of the travel of the spherical object and to develop golf swing strength. The target assembly may be arranged to direct return of the spherical object after the spherical object strikes the target assembly. For this purpose a ball return panel may be incorporated in the target assembly.

[0015] It should be understood that the present invention could be adapted to other shapes and sizes that provide a large enough striking surface on the practice ball that the practicing golfer need not concentrate on the precise location of striking, which a golfer must do with a small object, such as a golf ball, and is of sufficient weight to provide muscle building resistance yet can be displaced by a practice swing so that the golfer is able to complete the follow-through of the swing for the feel and practice of a complete swing.

[0016] In one embodiment, the target assembly has an energy absorbing surface, preferably mesh netting attached to a rigid net frame by adjustable fasteners. The netting may be surrounded by a strip of material having a plurality of holes spaced at regular intervals. The adjustable fasteners, for example S-hooks, clips, chains, rope or coiled springs, are inserted through the holes and attached to projections affixed to the rigid net frame. The energy absorption of the netting can be adjusted by these adjustable fasteners.

[0017] In the preferred embodiment, the rigid net frame is substantially rectangular. It should be appreciated, however, that the rigid net frame can be any shape upon which a netting can be adjustably attached.

[0018] The rigid net frame is supported by a frame support structure that maintains the rigid net frame in the proper spatial orientation. In one form, the frame support structure is made up of a base upon which rests the rigid net frame, the base being of sufficient size to prevent the rigid net frame from becoming unbalanced upon contact of the practice ball. Another form of the frame support structure is made up of a plurality of essentially triangular members, one member attached to or integral to each vertical side of the rigid net frame. The netting is adjusted such that the practice ball contacts the netting and rolls down the netting to the floor or ground and is directed back toward the striking position. To facilitate the return of the practice ball to the striking position, a ball return panel may be placed at the bottom of the assembly. In one embodiment, the ball return panel is oriented such that it angles upwardly and rearwardly so that a practice ball moving downwardly along the front of the netting engages the ball return panel and is thus directed away from the target assembly toward the ball striking position.

[0019] In another embodiment, the target assembly has a flat surface made of wood, concrete, brick or other material from which the practice ball rebounds from the target assembly toward the striking position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] Further features, embodiments, and advantages of the present invention will become apparent from the following detailed description with reference to the drawings, wherein:

[0021] Fig. 1 is a side elevational view of a golf practice and exercise device according to one of the preferred embodiments of the present invention, illustrating a golfer preparing for a practice swing at the practice ball toward the target assembly;

[0022] Fig. 2 is a front elevational view of the device of Fig. 1, illustrating a golfer with a golf club at the top of his backswing;

[0023] Fig. 3 is a side elevational view of a golf practice and exercise device according to one of the preferred embodiments of the present invention, illustrating one of the triangular support members used to support the rigid net frame and the movement of the practice ball upon contact with netting;

[0024] Fig. 4 is a front elevational view of the device of Fig. 3, illustrating one method for attaching the netting to the rigid net frame;

[0025] Fig. 5 is a side elevational view of a golf practice and exercise device according to one of the preferred embodiments of the present invention, illustrating, in dash lines, an alternate triangular support member used to support the rigid net frame and the deflection of the netting upon contact with the practice ball;

[0026] Fig. 6 is a view similar to Fig. 4, illustrating another method for attaching the netting to the rigid net;

[0027] Fig. 7 is an enlarged view of a segment of Fig. 6, illustrating the attachment of the netting to the rigid net frame;

[0028] Fig. 8 is a view similar to Fig. 7, illustrating an alternate method for attaching the netting to the rigid net frame;

[0029] Fig. 9 is an elevational view of a soccer ball incorporating the features of the hollow object of the present invention;

[0030] Fig. 10 is a diametric section view through the soccer ball of Fig. 9 and illustrating the vent through which air passes 1;

[0031] Fig. 11 is a view similar to Fig. 10 illustrating the hollow object being hit by a golf club and flexing inwardly with air exiting through the vent; and

[0032] Fig. 12 is a view similar to Fig. 10 illustrating the ball reflexing toward its original shape with air reentering through the vent.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0033] In its basic form, the present invention, as illustrated in Figs. 9-12, is a hollow object at least as large as a conventional softball having a resilient outer wall defining a hollow interior, the outer wall having a vent opening therethrough to allow restricted airflow out of the hollow interior upon inward flexing of the resilient outer wall when the object is struck by a golf club and to allow air to re-enter the hollow interior when the resilient outer wall flexes to its original shape following striking by a golf club.

[0034] The combination of being resilient and hollow and having a vent opening provides an object that will provide limited resistance to impact to give muscle exercise and memory to a golfer when striking the object with a golf club. Being large, it allows the golfer to swing freely without the distraction of having to focus on striking a small object, as is the case when striking a golf ball. Further, the vent opening allows partial collapse of the object so that it travels only a short distance after being struck, which allows use of the object in a small space. The object can be used by itself as a practice and exercise device or it can be used in connection with the apparatus disclosed herein or with other suitable apparatus.

[0035] In the preferred embodiment, the object is a soccer ball **2**, but it can be any appropriate object, preferably spherical, being resilient and the size of at least a softball up to the size of a basketball, of a diameter of 85mm to 300mm and most preferably being the size of the illustrated soccer ball or a volleyball and having a diameter of 170mm to 190mm. The object or ball **2** is formed with an outer wall **3** that defines a hollow interior **4** and is formed with a vent opening **5** that opens from the hollow interior **4** through the outer wall **3** to the atmosphere so that the air within the hollow interior **4** will remain equalized with the atmosphere. The outer wall **3** is sufficiently resilient to flex significantly when impacted by a golf club so as to provide limited resistance to impact suitable for proper exercise and so that the ball will travel appreciably less than an unvented ball such that it can be used in a limited space. The outer wall **3** is sufficiently resilient to reflex to its original position after flexing inwardly upon being struck by a golf club. The material of the outer wall **3** may be of leather, rubber, vinyl or other synthetic material. Preferably, it is formed of material the same as or similar to that of the wall of a soccer ball, volleyball or basketball, and most preferably is formed of material of a soccer ball.

[0036] In the specific form illustrated in Figs. 9-12, the object is a commercially available volleyball **2** that has an interior liner **6** interiorally adjacent the outer wall **3** and forming an air retaining bladder. This structure may be any similar form and the bladder is not necessary as the interior of the ball is not pressurized due to the vent opening.

[0037] The vent opening **5** is of a size that allows air to flow therethrough but restricts the flow of air exiting from the hollow interior **4** when the object **2** is being struck by a golf club to the extent that the object will not totally collapse and will provide desired resistance to inward flexing of the outer wall **3** while allowing air to flow back into the interior as the ball reflexes to its original shape after being impacted. Being uninflated, the ball is more easily deformed by impact and, therefore, provides less resistance to impact than an inflated ball.

[0038] The vent opening **5** may be of a selected size to provide desired characteristics. Preferably, in the case of a soccer ball, the vent opening **5** is in the form of a hole of a size of 4mm to 10mm, depending on the desired characteristics. Also, there may be more than one vent opening **5**, if desired.

[0039] The hollow interior **4** may contain limited amounts of a liquid, silicone, or other shock absorbing materials so long as there is sufficient air space and venting to provide the advantages of the present invention.

[0040] In Figure 10, a cross-section of the ball **2** is illustrated with the vent opening **5**. A double ended arrow **7** indicates the hole being open to the atmosphere, resulting in the hollow interior **4** being uninflated at atmospheric pressure. Figure 11 illustrates the ball **2** being impacted by the head **8** of a golf club with the outer wall **3** flexing inwardly and air exiting from the hollow interior

4 through the vent opening **5** as indicated by the arrow **9**. Figure 12 illustrates the ball **2** reflexing toward its original shape after being impacted, as indicated by the arrow **11**, with air returning to the hollow interior **4** through the vent opening **5** as indicated by the arrow **13**.

[0041] The resilient, hollow object **2** may be combined with a target assembly **10**. In the preferred embodiment, the target assembly **10** includes a rigid net frame **14**, an energy absorbing surface, preferably a mesh netting **16** attached to the rigid net frame **14** and a frame support structure **12**. The rigid net frame **14** is substantially rectangular and held in the desired spatial orientation by the frame support structure **12**. In this embodiment, the frame support structure **12** is a base upon which is disposed the bottom of the rigid net frame **14.** The frame support structure **12** rests on the ground or floor of the practice area and is of sufficient size to maintain the rigid net frame **14** in the proper spatial orientation upon impact with the ball **2**.

[0042] In the embodiment illustrated in Figs. 1 and 2, the ball **2** is substantially similar to a standard soccer ball or volleyball that is provided with a vent. The construction of the ball **2** results in the ball **2** having a low coefficient of elastic restitution that limits the travel of the ball upon contact with the golf club and limits the rebound upon contact of the ball **2** against the target assembly **10**.

[0043] When a golfer **40** uses the device of Figs. 1 and 2, he positions himself at a striking position, approximately 10 to 40 feet from the target assembly, in an address position with the golf club **30**. The golfer **40** then takes a normal back swing and then a down swing with the club **30**, making impact with the ball **2**. The ball **2** then travels in the direction imposed by the swing, either curving right or left or following a straight path. The ball **2** impacts the target assembly **10** and rolls back toward the golfer **40**. The ball **2** is sufficiently large that the golfer **40** does not have to concentrate on hitting the ball **2** at a specific point, but rather can concentrate on his technique for controlling the direction of travel of the ball **2**. Furthermore, the ball **2**, having a weight greater than that of a standard golf ball, offers extra resistance to the golfer **40**, providing him with exercises to strengthen muscles and increase the power of his swing.

[0044] In the embodiment illustrated in Figs. 4 - 8, the netting **16** is adjustably attached to the rigid net frame **14** by adjustable fasteners **24.** The netting 16 is surrounded by and fixedly attached to a strip of material **26.** Holes **28,** are cut in the strip of material **26** at regular intervals. The adjustable fasteners **24** are connected to the strip of material **26** through the holes **28.** The adjustable fasteners **24** may be any type fastener. One preferred embodiment, illustrated in Fig. 4, uses S-hooks for the adjustable fasteners **24**. Another preferred embodiment, illustrated in Figs. 6 and 7, uses an elongated clip. Still another preferred embodiment, illustrated in Fig. 8, uses portions of chain threaded through the holes **28** in the strip of material **26**.

[0045] In the embodiment illustrated in Figs. 3 and 4, the frame support structure **12** includes at least two triangular support members **18** integral to each vertical side of the rigid net frame **14.** The triangular support structure **18** has two angle members **18a, 18b,** connected to each other at a top apex **18a'.** One angle member **18b** is the vertical side of the rigid net frame **14.** The two angle members **18a, 18b** are connected to a horizontal member **18c** at corresponding bottom apexes **18b', 18c'**. The horizontal member **18c** rests upon the ground or floor of the practice area. An inner support member **19** is attached to the horizontal member **18c** and angle member **18b**. A ball return panel **20** is located between the inner support member **19** and the apex **18b'** between the horizontal member **18c** and the angle member **18b**, behind the netting. The ball return panel **20** extends horizontally along a lower portion of the netting **16** and is oriented upwardly and rearwardly so that the ball return panel is angled away from the netting **16** toward the striking position **5**. Upon impact with the netting **16**, the ball **2** travels downwardly along the front of the netting **16** and engages the ball return panel **20** which directs the ball **2** to approximately the striking position **5**.

[0046] In another embodiment, illustrated in Figs. 5 and 6, the frame support structure **12** includes the triangular support structure **18** as described above, but with the inner support member **19** and the ball return panel **20** eliminated. In this embodiment, the motion of the netting **16** is unrestricted.

[0047] In view of the aforesaid written description of the present invention, it will be readily understood by those persons skilled in the art that the present invention is susceptible of broad utility and application. Many embodiments and adaptations of the present invention other than those herein described, as well as many variations, modifications, and equivalent arrangements, will be apparent from or reasonably suggested by the present invention and the foregoing description thereof, without departing from the substance or scope of the present invention. Accordingly, while the present invention has been described herein in detail in relation to preferred embodiments, it is to be understood that this disclosure is only illustrative and exemplary of the present invention and is made merely for purposes of providing a full and enabling disclosure of the invention. The foregoing disclosure is not intended nor is to be construed to limit the present invention or otherwise to exclude any such other embodiments, adaptations, variations, modifications and equivalent arrangements, the present invention being limited only by the claims appended hereto and the equivalents thereof.

Claims

1. A golf practice and exercise device, comprising a hollow object at least as large as a conventional softball having a resilient outer wall defining a hol-

low interior, said outer wall having a vent opening therethrough to allow restricted air flow out of the hollow interior upon inward flexing of the resilient outer wall when the object is struck by a golf club and to allow air to re-enter the hollow interior when the resilient outer wall reflexes to its original shape following the striking by a golf club.

2. A golf practice and exercise device according to claim 1 wherein the vent is between approximately 4 mm and approximately 10 mm.

3. A golf practice and exercise device according to claim 1 wherein the outer wall is of a material substantially the same as the outer material of a conventional soccer ball.

4. A golf practice and exercise device according to claim 1 wherein the object is spherical.

5. A golf practice and exercise device according to claim 4 wherein the spherical object is of a diameter in the range of approximately 85 mm to 300 mm and the vent is in the range of approximately 4 mm to 10 mm.

6. A golf practice and exercise device according to claim 4 wherein the spherical object is of a diameter between approximately 170 mm and approximately 190 mm.

7. A golf practice and exercise device according to claim 4 wherein the spherical object is approximately the size of a conventional soccer ball.

8. A golf practice and exercise device according to claim 4 wherein the outer wall is of a material substantially the same as the outer wall of a conventional soccer ball.

9. A golf practice and exercise device according to claim 7 wherein the vent is approximately 4 mm to 10 mm in diameter.

10. A golf practice and exercise device according to claim 1 wherein the hollow object is approximately the size of a conventional volleyball.

11. A golf practice and exercise device according to claim 4 wherein the outer wall is of a material substantially the same as the outer wall of a conventional volleyball.

12. A golf practice and exercise device according to claim 10 wherein the vent is approximately 4 mm to approximately 10 mm in diameter.

13. A golf practice and exercise device according to claim 1 wherein the hollow object is of a size substantially the same as a conventional basketball.

14. A golf practice and exercise device according to claim 13 wherein the vent is approximately 4 mm to 10 mm in diameter.

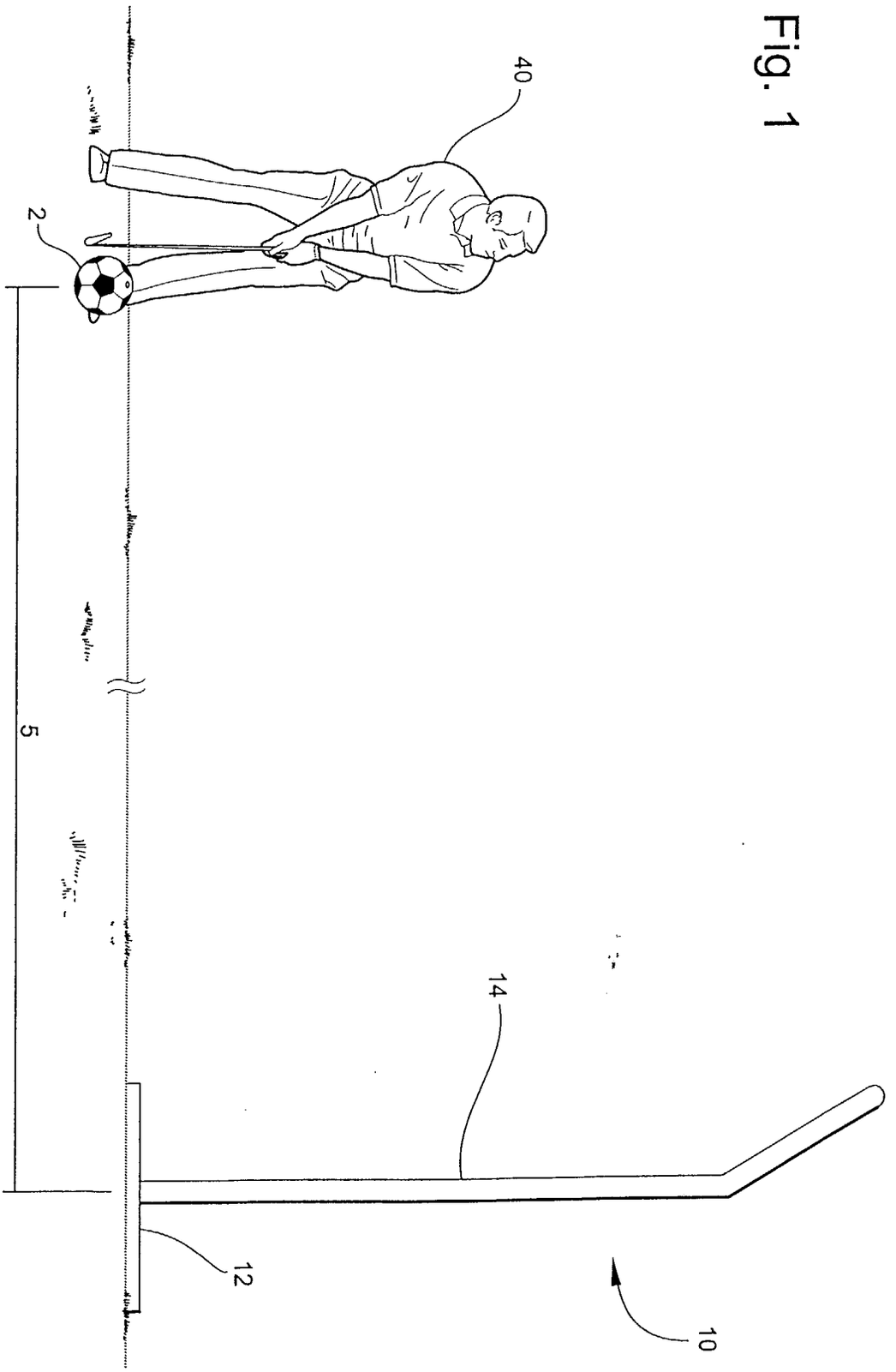
15. A golf practice and exercise device according to claim 4 wherein the outer wall is of a material substantially the same as the outer wall of a conventional basketball.

16. A golf practice and exercise device according to claim 4 and characterized further by a target assembly against which the spherical object is propelled after being struck from a striking position a sufficient distance from the target assembly that when the spherical object is struck by a golf club swung by a golfer it travels in a direction imposed by the golfer's swing whereby the golfer can practice to control the travel of the practice ball and to develop golf swing strength.

17. A golf practice and exercise device according to claim 16 wherein the target assembly is arranged to direct return of the spherical object to approximately the striking position.

18. A golf practice and exercise device according to claim 17 wherein the target assembly includes a ball return panel extending across a lower portion of the target assembly over which the spherical object rolls downwardly and from which the spherical object is directed to return to approximately the striking position.

Fig. 1



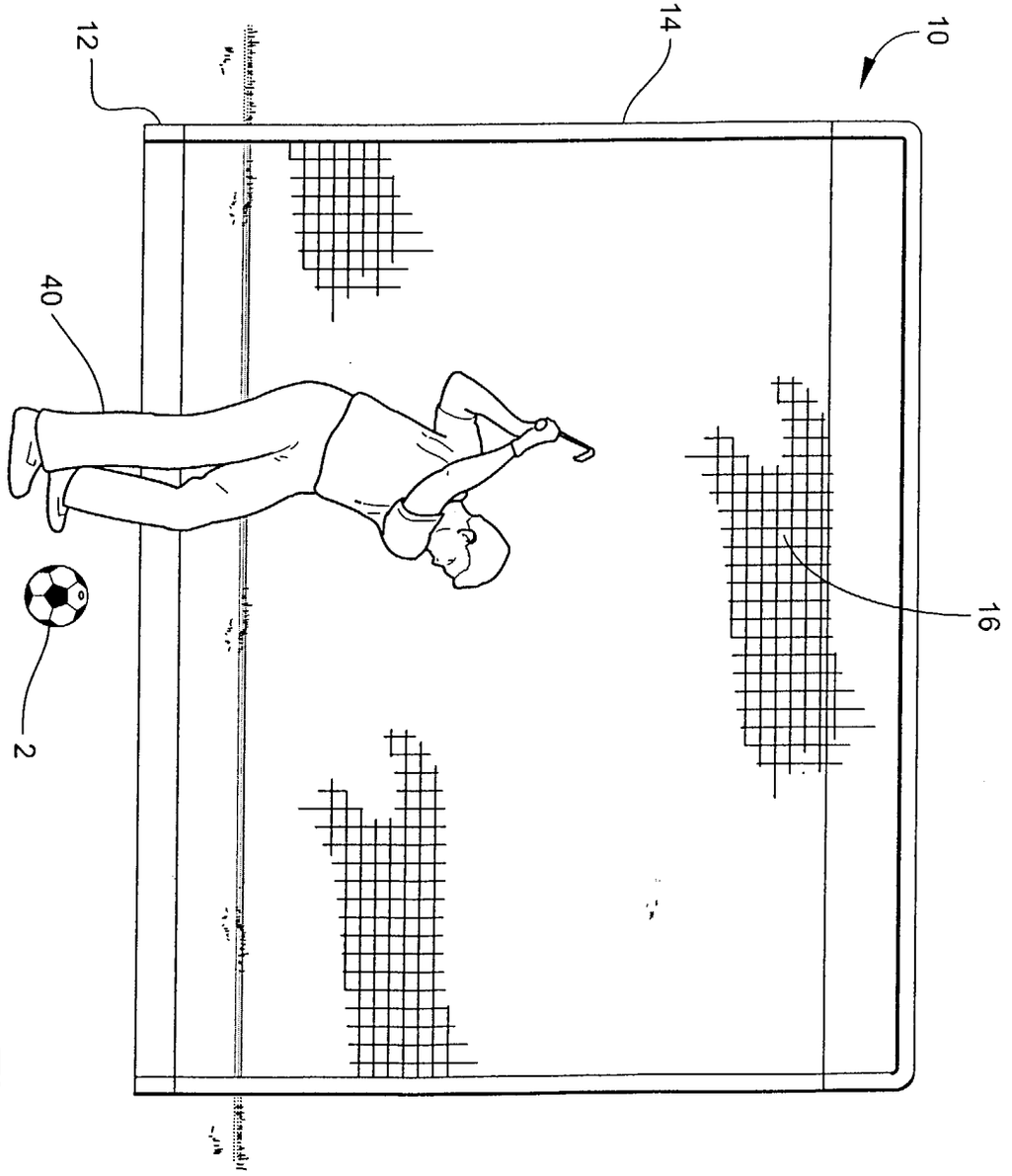


Fig. 2

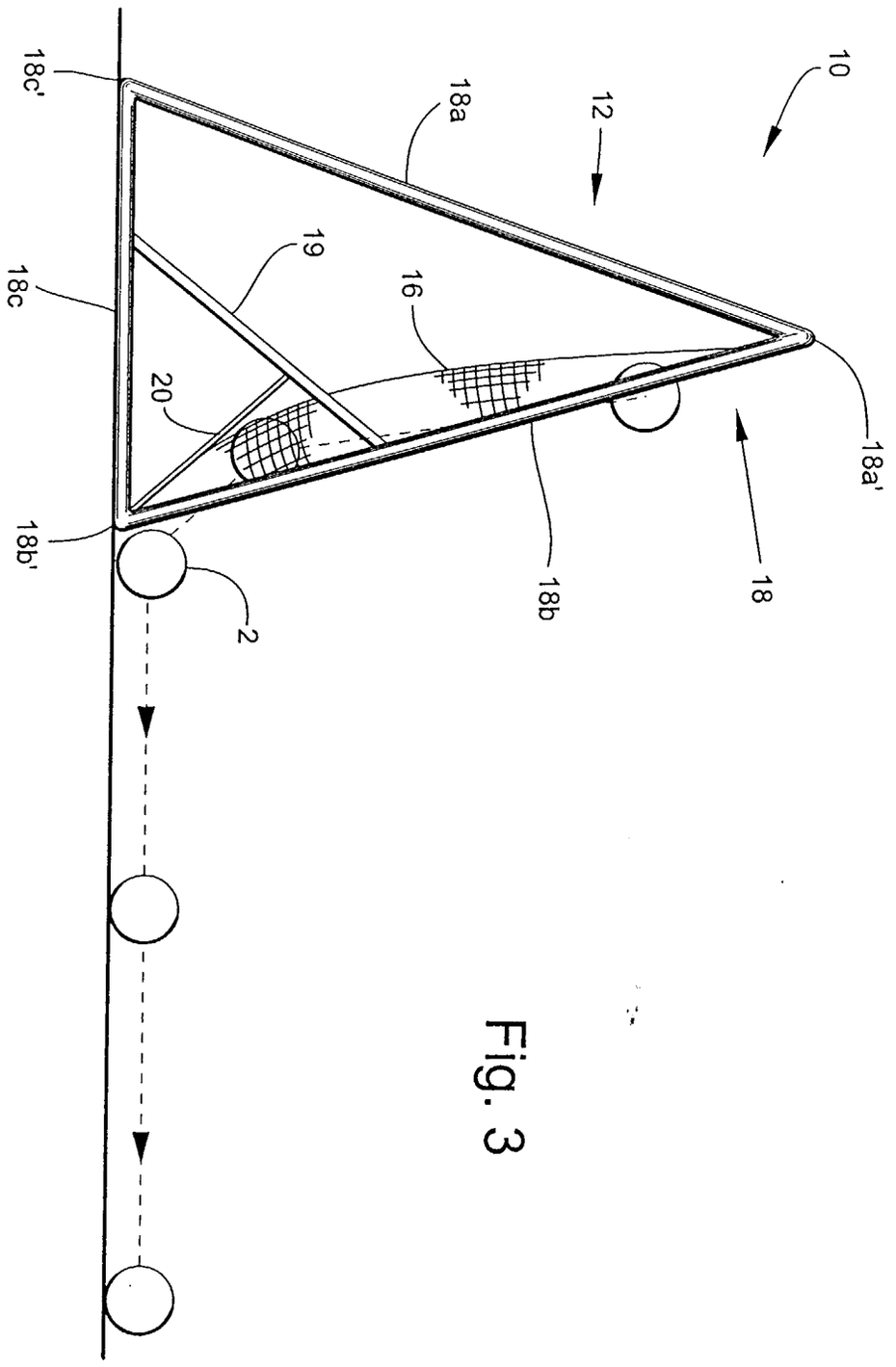


Fig. 3

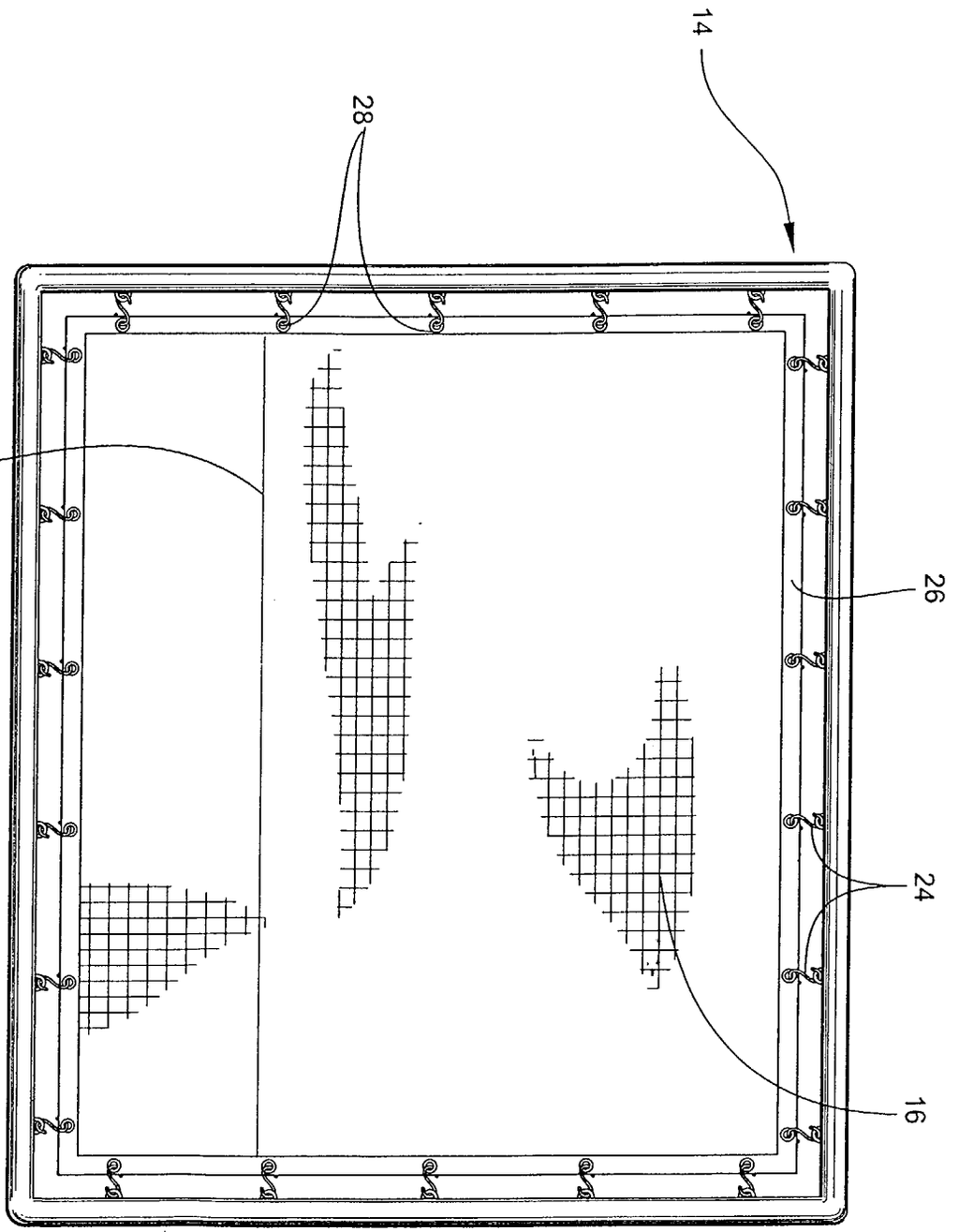


Fig. 4

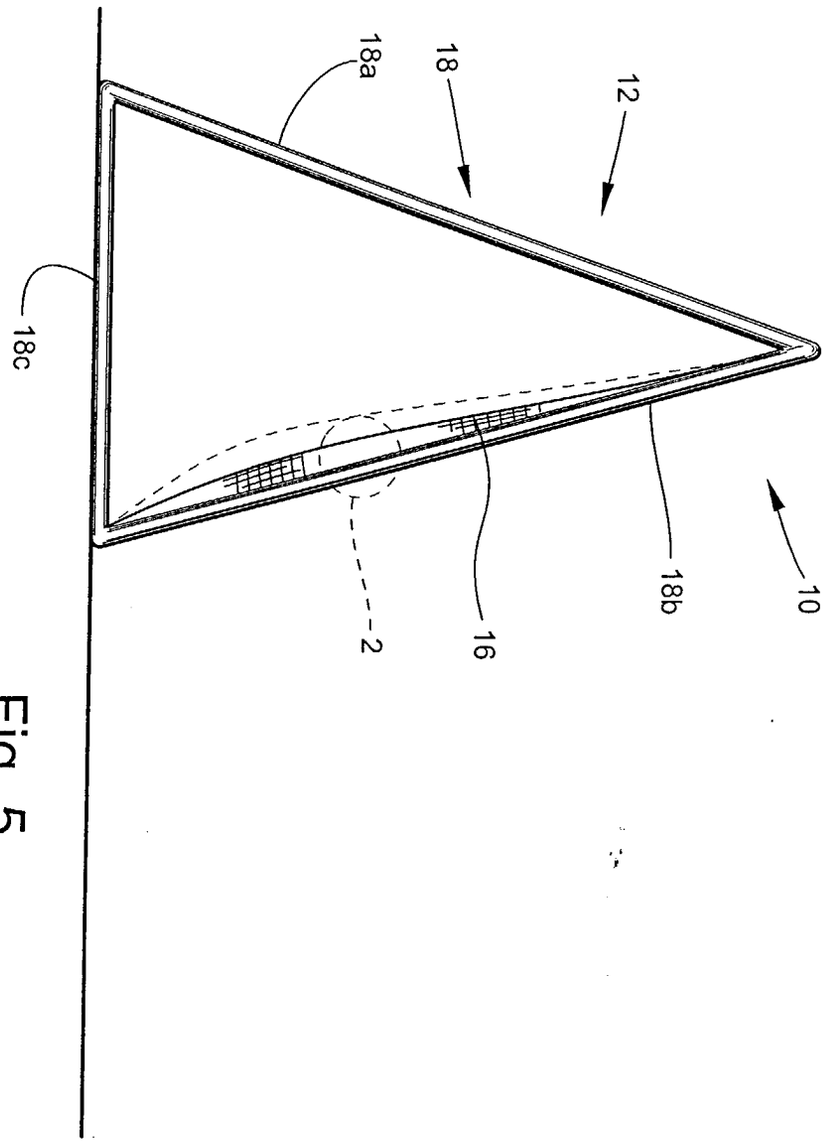


Fig. 5

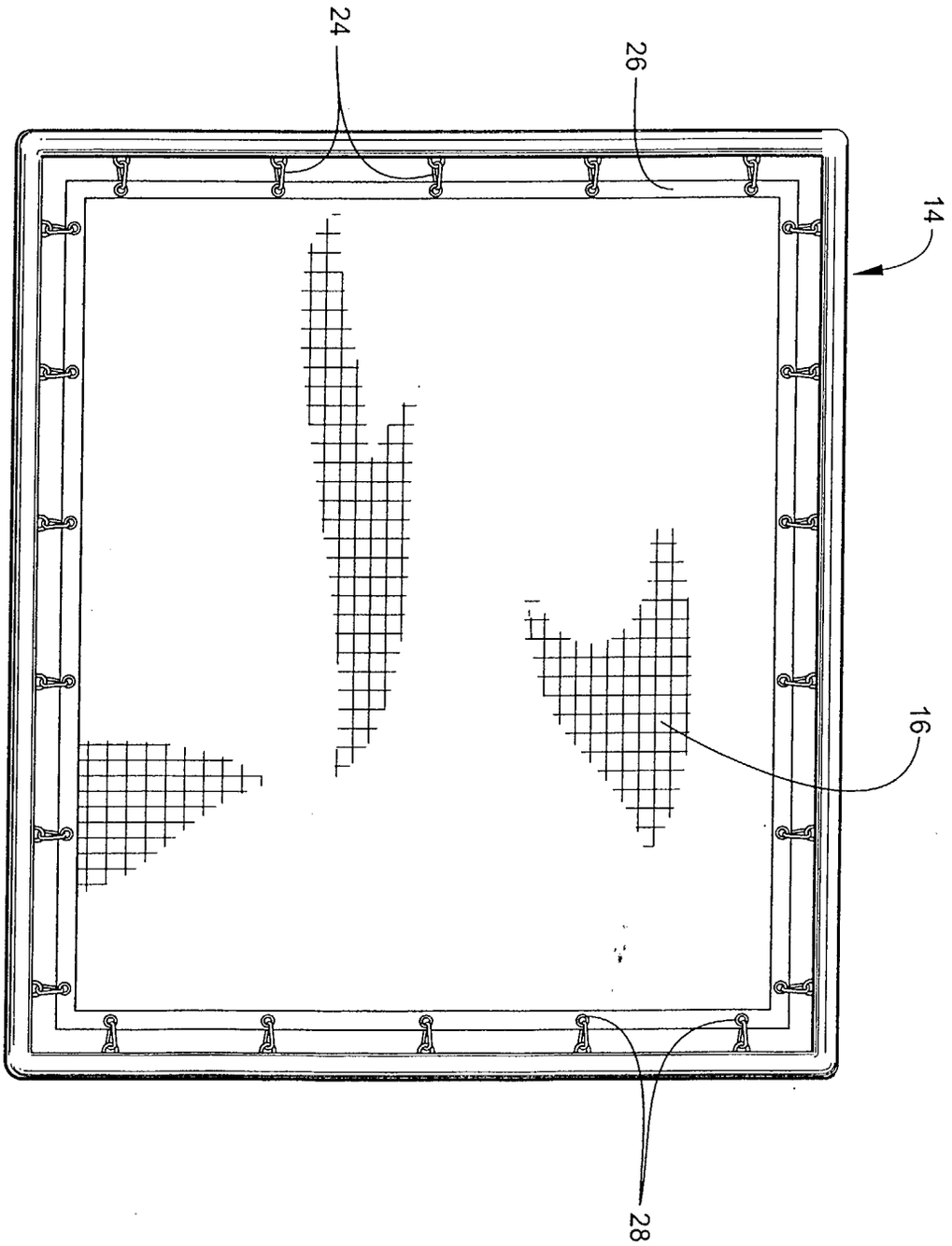


Fig. 6

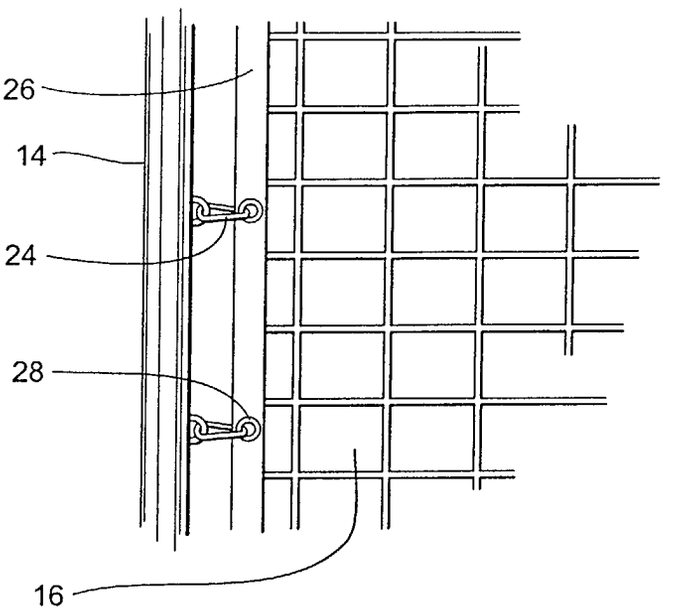


Fig. 7

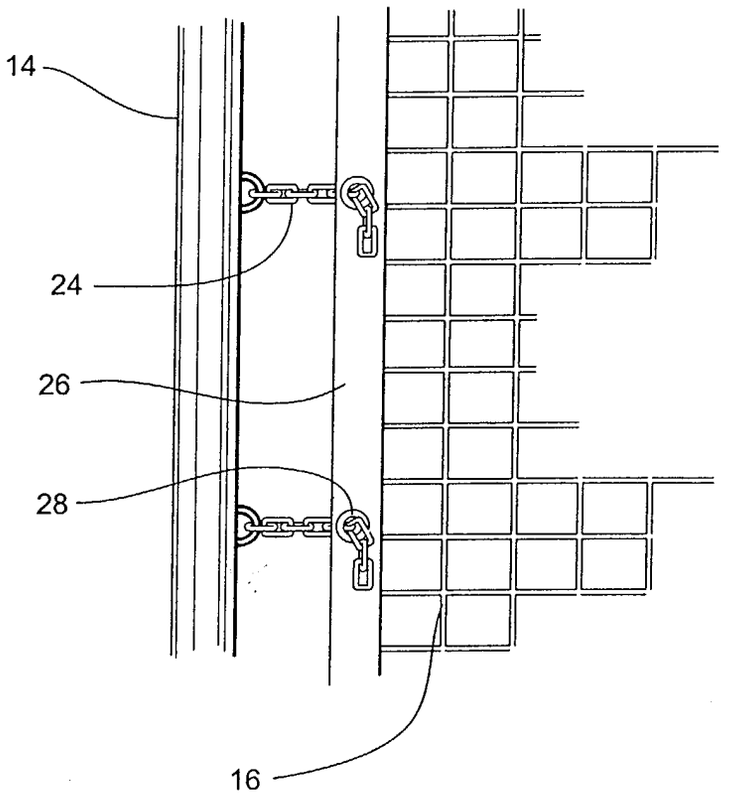


Fig. 8

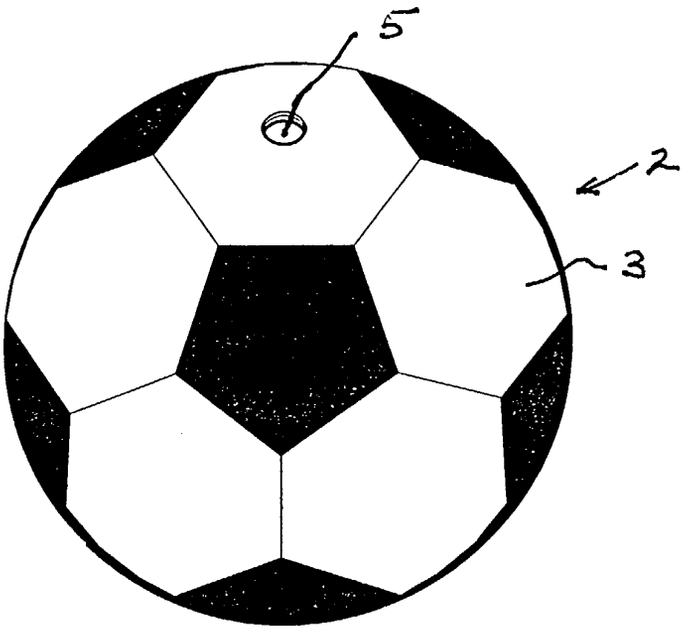


Fig. 9

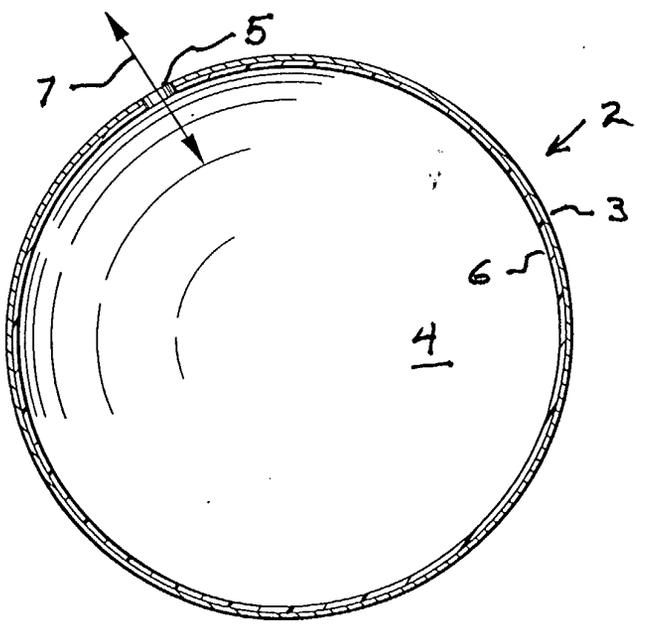


Fig. 10

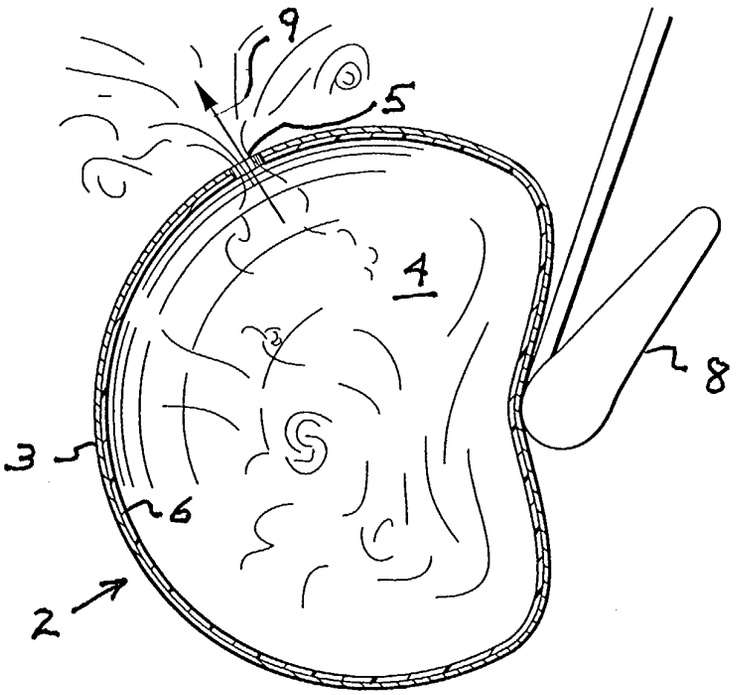


Fig. 11

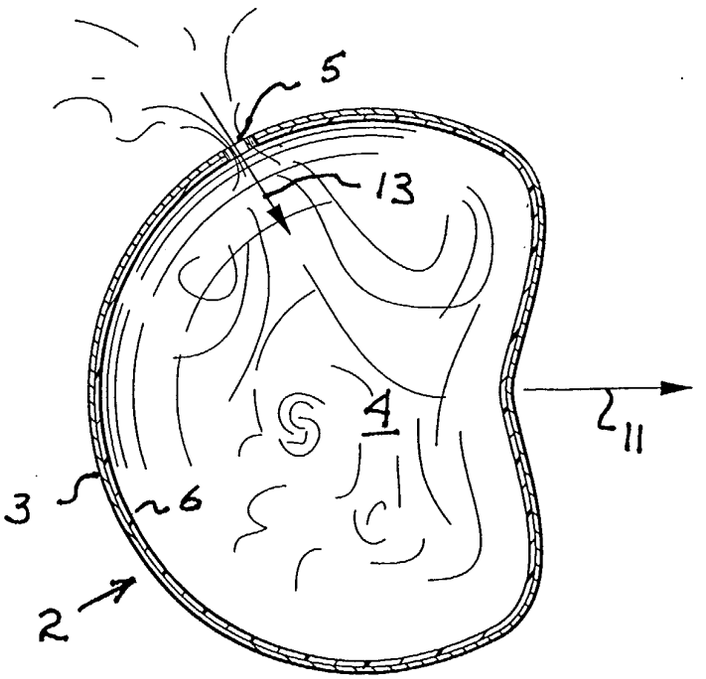


Fig. 12

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 00 5970

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X Y	US 3 764 140 A (HUSSEIN LOTFY M) 9 October 1973 (1973-10-09) * column 4, line 6-24; figure 9 *	1,2,4 3,5	A63B53/04 A63B47/02
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