(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
5 November 2009 (05.11.2009)

PCT

(10) International Publication Number
WO 2009/134235 A1

(51) International Patent Classification:
A63B 69/36 (2006.01)

(21) International Application Number:
PCT/US2008/011296

(22) International Filing Date:
29 September 2008 (29.09.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
12/112,277 30 April 2008 (30.04.2008) US

(71) Applicant and
(72) Inventor: **SHOEMAKER, Robert, H.** [US/US]; 768 Fern Drive, Longwood, FL 32779 (US).

(74) Agent: **LIVINGSTON, Edward, M.**; 963 Trail Terrace Drive, Naples, FL 34103 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

WO 2009/134235 A1

(54) **Title**: MAGNETIC GOLF PUTTING TRAINING DEVICE

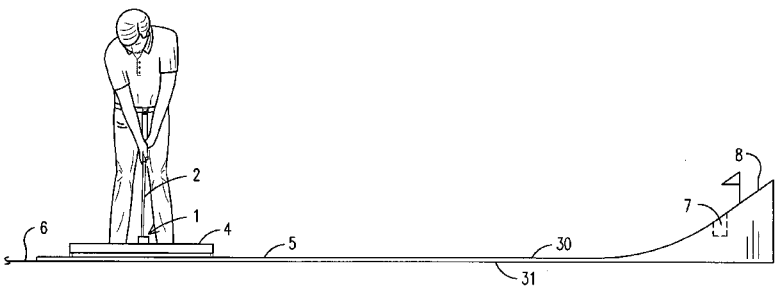


FIG. 1

(57) **Abstract**: A magnetic golf putting training device (1) having an attachment device (10) with two arms (3a and 3b), a clamp (25) for removably attaching the attachment device (10) to a putter (2), magnets (11a and 11b) located on the arms (3a and 3b) and guiding magnets (12a and 12b). The arms (3a and 3b) are located on each end of the putter head (9) during use. The guiding magnets (12a and 12b) are positioned such that they are substantially perpendicular to the putter head (9) and such that the electromagnetic field of each guiding magnets (12a and 12b) is facing towards the like electromagnetic field of each magnet (11a and 11b) located on the arms (3a and 3b) so as to create a repelling force (28).

MAGNETIC GOLF PUTTING TRAINING DEVICE

BACKGROUND OF THE INVENTION

This invention relates to golf putter training devices, more particularly, a magnetic golf putting training device that utilizes repulsive magnetic forces to train a user to properly align a putter head and stroke.

In golf, successful putting is truly an art form as a golfer must be certain that proper positioning is maintained at all times. For instance, the golfer must make certain that he/she is properly holding the golf putter, that his/her body is in proper alignment in relation to the putter and the hole and the alignment of the face of the putter head is square to the golf ball. In addition, even if all of the above positions are proper, the golfer must exert just the right amount of force on the golf ball so as to sink the putt.

Because a golfer must be cognizant of his/her positioning at all times, it is easy for a golfer to "overthink" his/her positioning, thereby preventing him/her to learn how to put in a natural, fluid manner. Rather, the overthinking leads to short, choppy putts, which does not readily promote the smooth, graceful and accurate putting which is ultimately desired.

Although there are currently putting training devices that include visual indicators to permit a user to monitor his/her positioning and follow through on the putt, these visual indicators distract the user from learning proper technique as the user is more focused on looking at the training aid as opposed to feeling and learning the proper putting technique.

Rather, a better method for training a user to properly putt is by permitting the user to concentrate on the motion of the putt itself, thereby allowing his/her body to become accustomed to the proper putting positioning and follow through.

Thus, a need exists for a magnetic golf putting training device that utilizes repulsive magnetic forces to train a user to properly align a putter head and stroke.

The relevant prior art includes the following references:

Patent No. (U.S. unless stated otherwise)	Inventor	Issue/Publication Date
6,769,995	Rhodes *et al.*	08-03-2004
4,017,082	Channing *et al.*	04-12-1977
7,201,667	Dorman	04-10-2007
6,503,152	Pelz	01-07-2003
5,435,547	Lee	07-25-1995
6,241,621	Maher	06-05-2001
6,709,343	O'Connor *et al.*	03-23-2004
2,340,793	Chapman	02-01-1944
1,644,392	Myers	10-04-1927

SUMMARY OF THE INVENTION

The primary object of the present invention is to provide a magnetic golf putting training device that utilizes repulsive magnetic forces to train a user to properly align a putter head and stroke.

A further object of the present invention is to provide a magnetic golf putting training device that retroactively fits existing golf putters.

An even further object of the present invention is to provide a magnetic golf putting training device that is easy to use.

Another object of the present invention is to provide a magnetic golf putting training device that may be used in conjunction with a practice mat or on a golf course.

The present invention fulfills the above and other objects by providing a magnetic golf putting training device having a golf putter with a putter head, an attachment device with at least one arm, an attachment means for removably attaching the attachment device to a golf putter, at least one magnet located on said at least one arm, said at least one magnet having a first electromagnetic field and a second electromagnetic field and at least one guiding magnet having a first magnetic field equal to said first electromagnetic field of said at least one magnet located on said at least one arm and a second electromagnetic field equal to said second electromagnetic field of said at least one magnet located on said at least one arm, said at least one guiding magnet is substantially perpendicular to said putter head when positioned for use wherein when said at least one magnet on said at least one arm is positioned such that said first electromagnetic field is disposed towards said first magnetic field on said at least one guiding magnet so as to create a repelling force.

To use the present invention, a user first secures the attachment device to a golf putter such that the arms of the device are located on each end of a golf putter head. Then, the user positions the guiding magnets such that the first magnetic field of each guiding magnet are facing towards the first magnetic field of each magnet located on the arms so as to create a

repelling force. The user then places the putter head between the guiding magnets such that the putter head is substantially perpendicular to the guiding magnets and putts. Thus, when a user swings the putter, the repelling force maintains the putter head within a predetermined area between the guiding magnets and keeps the putter head in a straight line between the guiding magnets during the stroke. In the alternative, the magnets on the arms and the guiding magnets may be positioned such that the second magnetic fields are facing towards one another so as to create a repelling force.

The above and other objects, features and advantages of the present invention should become even more readily apparent to those skilled in the art upon a reading of the following detailed description in conjunction with the drawings wherein there is shown and described illustrative embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

In the following detailed description, reference will be made to the attached drawings in which:

FIG. 1 is a side view of a magnetic golf putting training device of the present invention in use;

FIG. 2 is a top perspective view of the magnetic golf putting training device of the present invention;

FIG. 3 is a side plan view of a guiding magnet secured to a holder of the golf putting training device of the present invention;

FIG. 4 is a front view of the attachment device of the magnetic golf putting training device of the present invention installed on a golf putter;

FIG. 5 is a top view of the embodiment of **FIG. 4**;

FIG. 6 is a side view of a holder of the golf putting training device of the present invention secured to a base member;

FIG. 7 is a bottom view of a leg of a holder of the golf putting training device of the present invention;

FIG. 8 is a top view of a planar surface of the golf putting training device of the present invention;

FIG. 9 is a bottom view of a leg of a holder having a hook and loop type fastening means;

FIG. 10 is a top view of a planar surface having guiding magnets located directly thereon of the golf putting training device of the present invention; and

FIG. 11 is a side plan view of a planar surface of the golf putting training device of the present invention having at least one guiding magnet located therein.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

For purposes of describing the preferred embodiment, the terminology used in reference to the numbered components in the drawings is as follows:

1. magnetic golf putting training device, generally
2. putter
3a. first arm
3b. second arm
4. holder
5. planar surface
6. ground surface
7. hole
8. ramp
9. putter head
10. attachment device, generally
11a. first magnet
11b. second magnet
12a. first guiding magnet
12b. second guiding magnet
13. attachment means
14. slot
15. first electromagnetic field
16. second electromagnetic field
17. leg
18. retaining member
19. aperture
20. wing nut
21. base member
22. leg magnet
23. lag hole
24. hook and loop fastening means
25. clamp
26. spike
27. horizontal member
28. repelling force
29. putting area
30. top surface
31. bottom surface
32. bolt
33. fastening means

With reference to **FIG. 1,** a side view of a magnetic golf putting training device of the present invention in use is shown. The magnetic golf putting training device, generally **1** preferably has at least one arm **3a**, is permanently or removably secured to a putter **2** and is preferably used in conjunction with a holder **4** and a planar surface **5**, such as a mat, having a top surface **30** and a bottom surface **31** wherein the bottom surface **31** is located on a ground surface **6**. The planar surface **5** may include a ramp **8** and a hole **7** to simulate a hole at a golf course.

FIG. 2 shows a top perspective view of the magnetic golf putting training device of the present invention. The golf putting training device **1** includes an attachment device **10** and at least one guiding magnet **12a** and **12b**. The attachment device **10** includes at least one arm **3a** having at least one magnet **11a** attached thereto. However, the preferred embodiment includes the attachment device **10** having a first arm **3a** and a second arm **3b** with a first magnet **11a** attached to the first arm **3a** and a second magnet **11b** attached to the second arm **3b**. A horizontal member **27** is preferably located between the first arm **3a** and the second arm **3b** and is securable to the golf putter **2** via at least one attachment means **13**, which is preferably a clamp **25**. The arms **3a** and **3b** preferably extend perpendicularly from the horizontal member **27** so as to be located on each end of the putter head **9** when the attachment device **10** is secured to the putter **2**. The horizontal member **27** may also include at least one slot **14** to permit a user to adjustably secure the attachment device **10** to the putter **2**.

A first guiding magnet **12a** and a second guiding magnet **12b** are positioned on the planar surface **5** so as to extend towards the hole **7**. The guiding magnets **12a** and **12b** are also positioned so as to be parallel to one another to create a putting area **29** wherein the putter **2** with attachment device **10** is located therein during use. The guiding magnets **12a** and **12b** preferably include a fastening means **33** to secure the guiding magnets **12a** and **12b** in a predetermined position on the planar surface **5** or, in the alternative, on a ground surface **6**.

As is commonly known, each magnet **11a**, **11b**, **12a** and **12b** has a first electromagnetic field **15**, such as a positive electromagnetic field or a North pole, and a second electromagnetic field **16**, such as a negative electromagnetic field or a South pole. As is also commonly known, when two dissimilar electromagnetic fields are located adjacent to one another, an attractant force is created. On the other hand, when similar electromagnetic fields are adjacent to one another, a repelling force **28** is created. Thus, if two first electromagnetic fields **15** or two second electromagnetic fields **16** are adjacent to one another, a repelling force **28** is created wherein the electromagnetic fields **15** or **16** push away or repel one another.

Using this phenomenon, the guiding magnets **12a** and **12b** are positioned such that the first electromagnetic fields **15** of the guiding magnets **12a** and **12b** are facing towards the first electromagnetic fields **15** of the magnets **11a** and **11b** to create a repelling force **28**. This repelling force **28** maintains the putter head **9** within a predetermined area between the guiding magnets **12a** and **12b** so as to encourage proper putting.

During use of the present invention, the guiding magnets **12a** and **12b** are positioned such that they are substantially perpendicular to the putter head **9**. The guiding magnets **12a** and **12b** may be located on holders **4** which extend a predetermined distance above the planar surface **5**. In this manner, even if the user exerts enough force on the putter **2** so as to overcome the repulsive force **28**, he/she will be prevented from extending the putter head **9** outside of the confines of the putting area **29**.

Furthermore, the guiding magnets **12a** and **12b** may be of any type of magnet, including, but not limited to, bar magnets, round magnets, a series of magnets and the like.

Optional lag holes **23** may be located on the planar surface **5** so as to further aid in training a user to putt as to the speed of a putter stroke. In addition, although the planar surface **5** is shown having a ramp **8** and a hole **7**, the planar surface **5** may not include a ramp **8** and, rather than having an actual hole **7**, may include a simulated hole **7** that is painted or otherwise marked on the planar surface **5**.

Next, **FIG. 3** shows a side plan view of a guiding magnet secured to a holder of the golf putting training device of the present invention. The holder **4** is preferably made of a metal material so as to permit the guiding magnet **12a** to adhere thereto; however, the holder **4** may be constructed of any material.

Preferably located on the holder **4** is at least one aperture **19** to permit a retaining member **18**, such as a spike **26** or bolt **32** (as shown in **FIG. 6**), to be inserted therethrough. The retaining member **18** permits a user to secure the holder **4**, and thus guiding magnet **12a**, in a predetermined location, such as on a planar surface **5** or into a ground surface **6**, such as on a golf course.

Optional legs **17** may be located on the holder **4** to elevate the holder **4** a predetermined distance above the planar surface **5** or ground surface **6** so as to create a space therebetween.

With respect to **FIGS. 4** and **5**, varying views of the attachment device of the magnetic golf putting training device of the present invention installed on a golf putter are shown. The

attachment device **10** preferably includes a first arm **3a** and a second arm **3b** and a horizontal member **27** located therebetween. The arms **3a** and **3b** preferably extend in a perpendicular manner from the horizontal member **27** and terminate adjacent to the putter head **9**. The arms **3a** and **3b** are located preferably on both ends of the putter head **9** so as to encompass the putter head **9**.

The attachment device **10** preferably includes an attachment means **13**, such as a clamp **25** having a bolt **32** and wingnut **20**. The attachment device **10** is preferably removably secured to the golf putter **2** via the attachment means **13**. In addition, the attachment device **10** is preferably adjustably secured to the golf putter **2** by sliding the bolt **32** along the slot **14** to a desired position.

FIG. 6 shows a side view of a holder of the golf putting training device of the present invention secured to a base member. At least one retaining member **18**, such as at least one bolt **32**, preferably extends through the holder **4** and planar surface **5** and into a base member **21** so as to retain the holder **4** in a predetermined position on the planar surface **5**. The base member **21** may be made of any material, including, but not limited to, plastic, wood and metal.

Next, **FIG. 7** shows a bottom view of a leg of a holder of the golf putting training device of the present invention. The leg **17** may include at least one leg magnet **22** to permit a user to secure the holder **4** to the base member **21** if the base member **21** is made of metal.

In this manner, a user is able to quickly and easily set up the golf putting training device **1** of the present invention without the use of at least one retaining member **18**.

With reference to **FIG. 8**, a top view of a planar surface of the golf putting training device of the present invention is shown. The planar surface **5** may include hook and loop fastening means **24** located on the putting area **29** for securement of the guiding magnets **12a** and **12b** when the guiding magnets **12a** and **12b** have corresponding hook and loop fastening means **24** located thereon (not shown), securement of the holders **4** when corresponding hook and loop fastening means **24** are located thereon (not shown) or securement of the legs **17** of the holders **4** when corresponding hook and loop fastening means **24** are located thereon as shown in **FIG. 9**.

FIG. 10 shows a top view of a planar surface having guiding magnets located directly thereon of the golf putting training device of the present invention. Rather than having the guiding magnets **12a** and **12b** secured to a holder **4** wherein the holders **4** are secured to the planar surface **5**, the guiding magnets **12a** and **12b** may be directly secured to or placed on top of the planar surface **5**.

In the alternative, the guiding magnets **12a** and **12b** may be directly secured to or placed on top of a ground surface **6**, such as a golf course (not shown).

Finally, **FIG. 11** shows a side plan view of a planar surface of the golf putting training device of the present invention having at least one guiding magnet located therein. The planar surface **5** includes a top surface **30** and a bottom surface **31** wherein at least one guiding magnet **12a** is located between the top surface **30** and the bottom surface **31**.

The use of the present invention will teach a person to properly align a putter head and stroke.

It is to be understood that while a preferred embodiment of the invention is illustrated, it is not to be limited to the specific form or arrangement of parts herein described and shown. It will be apparent to those skilled in the art that various changes may be made without departing from the scope of the invention and the invention is not be considered limited to what is shown and described in the specification and drawings.

CLAIMS

Having thus described my invention, I claim:

1. A magnetic golf putting training device comprising:

a golf putter having a putter head;

at least one attachment device having at least one arm;

at least one attachment means for removably attaching said at least one attachment device to said golf putter;

at least one magnet located on said at least one arm;

said at least one magnet having a first electromagnetic field and a second electromagnetic field; and

at least one guiding magnet having a first magnetic field equal to said first electromagnetic field of said at least one magnet located on said at least one arm and a second electromagnetic field equal to said second electromagnetic field of said at least one magnet located on said at least one arm;

said at least one guiding magnet is substantially perpendicular to said putter head when positioned for use;

wherein when said at least one magnet on said at least one arm is positioned such that said first electromagnetic field is disposed towards said first magnetic field on said at least one guiding magnet a repelling force is created.

2. The magnetic golf putting training device of claim 1 wherein:

said at least one attachment means is at least one clamp.

3. The magnetic golf putting training device of claim 2 wherein:

said at least one clamp is adjustably attached to said at least one attachment device.

4. The magnetic golf putting training device of claim 1wherein:

said at least one arm is substantially perpendicular to a ground surface.

5. The magnetic golf putting training device of claim 3 wherein:

said at least one arm is substantially perpendicular to a ground surface.

6. The magnetic golf putting training device of claim 1 further comprising:

at least one means for fastening said at least one guiding magnet in a predetermined position.

7. The magnetic golf putting training device of claim **6** wherein:

said at least one means for fastening is at least one holder;

said at least one guiding magnet is secured to said at least one holder;

said at least one holder having at least one aperture; and

at least one retaining member sized for insertion into said at least one aperture and into a ground surface.

8. The magnetic golf putting training device of claim **7** wherein:

said at least one retaining member is at least one spike.

9. The magnetic golf putting training device of claim **6** further comprising:

at least one substantially planar surface having a top surface and a bottom surface wherein said at least one guiding magnet is positioned on said top surface.

10. The magnetic golf putting training device of claim **9** wherein:

said at least one means for fastening is at least one holder;

said at least one guiding magnet is secured to said at least one holder;

said at least one holder having at least one hook and loop type fastening means; and

at least one corresponding hook and loop type fastening means located on said mat top surface.

11. The magnetic golf putting training device of claim 6 further comprising:

at least one substantially planar surface having a top surface and a bottom surface wherein said at least one guiding magnet is located between said top surface and said bottom surface.

12. The magnetic golf putting training device of claim 7 further comprising:

at least one leg located on said at least one holder.

13. The magnetic golf putting training device of claim 8 further comprising:

at least one leg located on said at least one holder.

14. The magnetic golf putting training device of claim 10 further comprising:

at least one leg located on said at least one holder.

15. A magnetic golf putting training device of claim 9 further comprising:

at least one designation for a hole located on said at least one substantially planar surface top surface.

16. A magnetic golf putting training device comprising:

a golf putter having a putter head;

at least one attachment device having at least one arm;

at least one attachment means for removably attaching said at least one attachment device to said golf putter;

at least one magnet located on said at least one arm;

said at least one magnet having a first electromagnetic field and a second electromagnetic field; and

at least one guiding magnet having a first magnetic field equal to said first electromagnetic field of said at least one magnet located on said at least one arm and a second electromagnetic field equal to said second electromagnetic field of said at least one magnet located on said at least one arm;

said at least one guiding magnet is substantially perpendicular to said putter head when positioned for use;

at least one means for fastening said at least one guiding magnet in a predetermined position;

wherein when said at least one magnet on said at least one arm is positioned such that said first electromagnetic field is disposed towards said first magnetic field on said at least one guiding magnet so as to create a repelling force.

17. The magnetic golf putting training device of claim **16** further comprising:

at least one means for fastening said at least one guiding magnet in a predetermined position.

18. The magnetic golf putting training device of claim **16** further comprising:

at least one substantially planar surface having a top surface and a bottom surface wherein said at least one guiding magnet is positioned on said top surface.

19. The magnetic golf putting training device of claim **16** further comprising:

at least one substantially planar surface having a top surface and a bottom surface wherein said at least one guiding magnet is located between said top surface and said bottom surface.

20. The magnetic golf putting training device of claim **17** wherein:

said at least one means for fastening is at least one holder;

said at least one guiding magnet is secured to said at least one holder;

said at least one holder having at least one aperture; and

at least one retaining member sized for insertion into said at least one aperture and into a base member.

21. A magnetic golf putting training device of claim **18** further comprising:

at least one designation for a hole located on said at least one substantially planar surface top surface.

22. A magnetic golf putting training device of claim **19** further comprising:

at least one designation for a hole located on said at least one substantially planar surface top surface.

23. A magnetic golf putting training device comprising:

a golf putter having a putter head;

at least one attachment device having a horizontal member, a first arm and a second arm;

said horizontal member is located between said first arm and said second arm;

said first arm is parallel to said second arm;

said at least one attachment device is attached to said golf putter;

a first magnet located on said first arm;

a second magnet located on said second arm;

said first magnet having a first electromagnetic field and a second electromagnetic field;

said second magnet having a first electromagnetic field and a second electromagnetic field;

a first guiding magnet having a first magnetic field equal to said first electromagnetic field of said first magnet located on said first arm and a second electromagnetic field equal to said second electromagnetic field of said first magnet located on said first arm;

a second guiding magnet having a first magnetic field equal to said first electromagnetic field of said second magnet located on said second arm and a second electromagnetic field equal to said second electromagnetic field of said second magnet located on said second one arm;

at least one substantially planar surface having a top surface and a bottom surface wherein said first guiding magnet is positioned on said top surface;

at least one substantially planar surface having a top surface and a bottom surface wherein said second guiding magnet is positioned on said top surface;

at least one means for fastening said first guiding magnet in a predetermined position on said at least one substantially planar top surface;

at least one means for fastening said second guiding magnet in a predetermined position on said at least one substantially planar top surface;

wherein said first guiding magnet and said second guiding magnet are parallel to one another when fastened on said at least one substantially planar top surface so as to create a putting area;

said first guiding magnet is substantially perpendicular to said putter head when positioned for use;

said second guiding magnet is substantially perpendicular to said putter head when positioned for use;

wherein when said first magnet on said first arm is positioned such that said first electromagnetic field is disposed towards said first magnetic field on said first guiding magnet so as to create a repelling force;

wherein when said second magnet on said second arm is positioned such that said first electromagnetic field is disposed towards said first magnetic field on said second guiding magnet so as to create a repelling force; and

at least one designation for a hole located on said at least one substantially planar surface top surface.

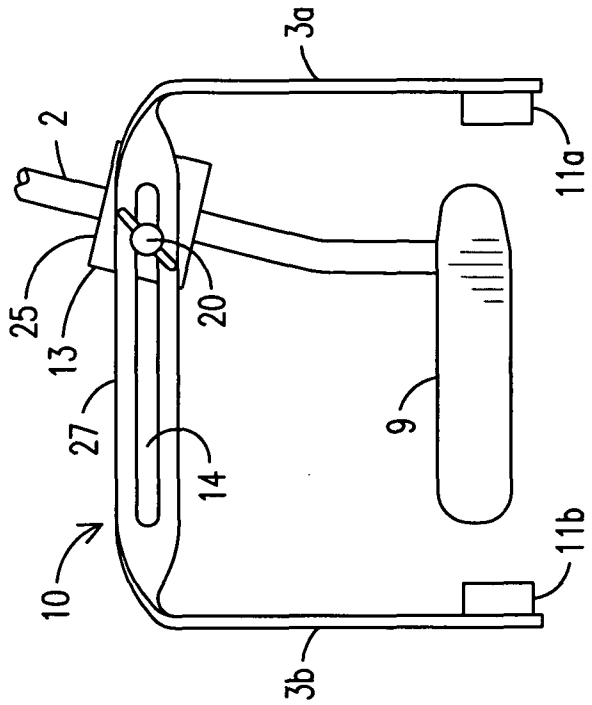


FIG. 4

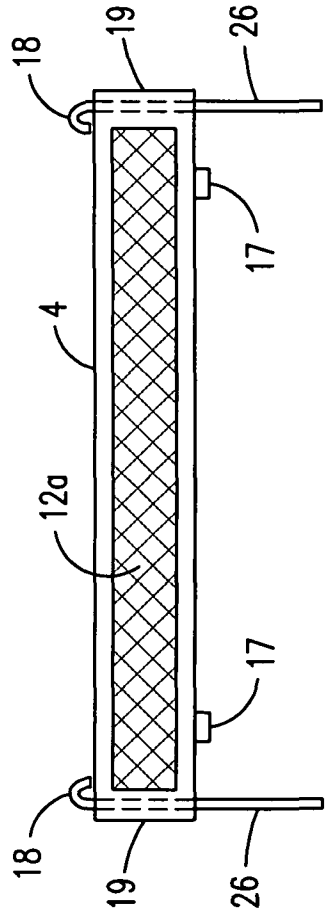


FIG. 3

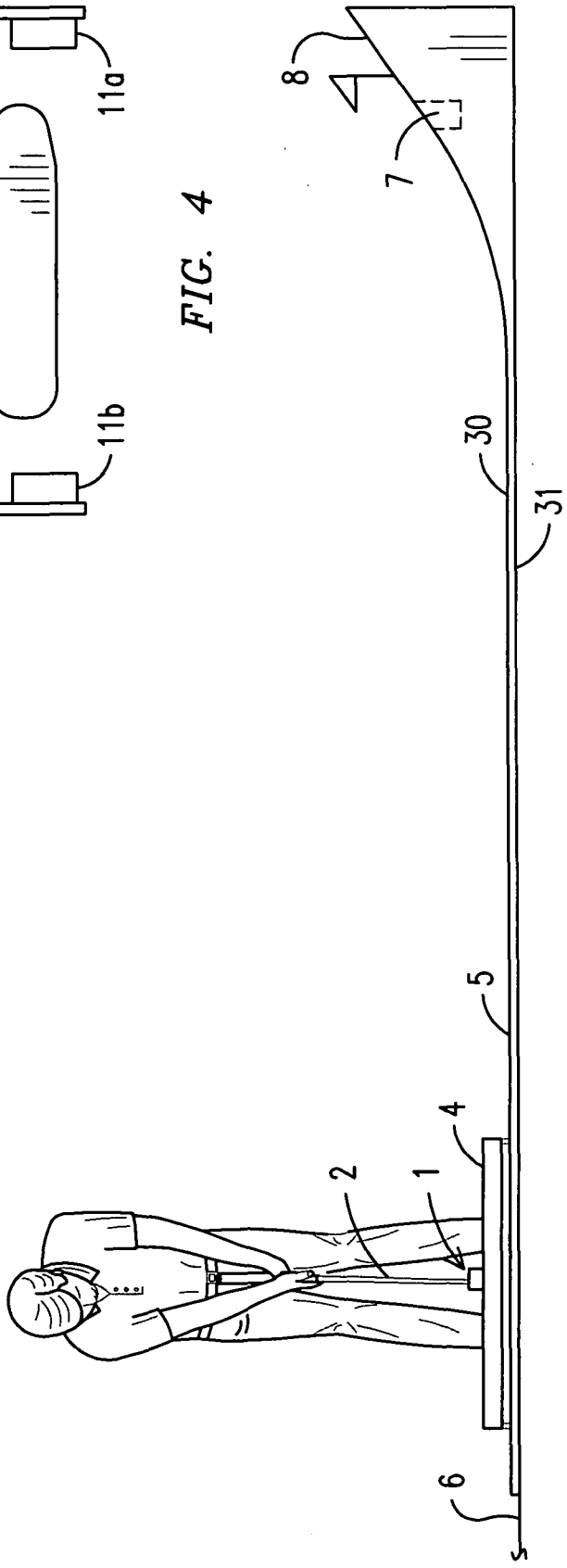
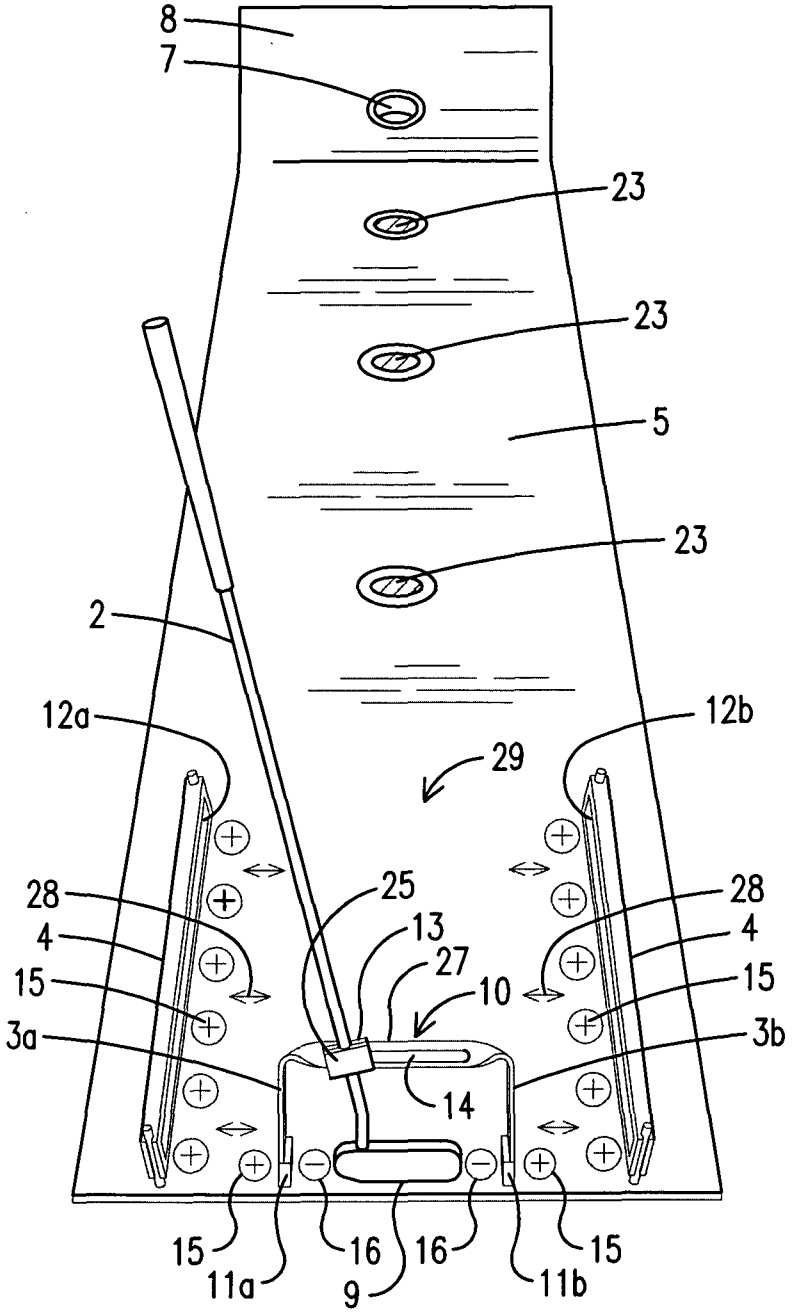


FIG. 1



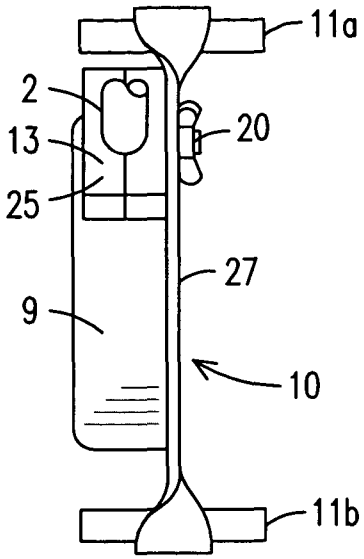


FIG. 5

FIG. 2

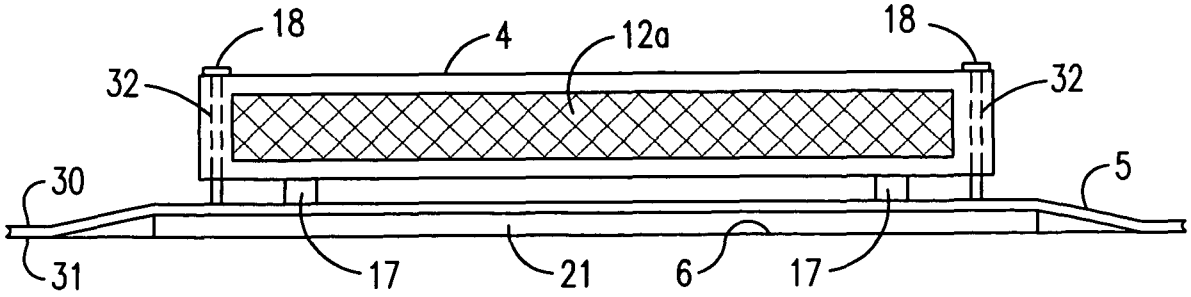


FIG. 6

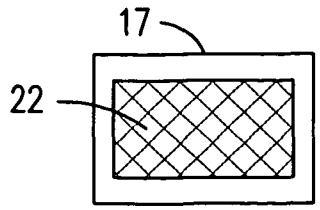


FIG. 7

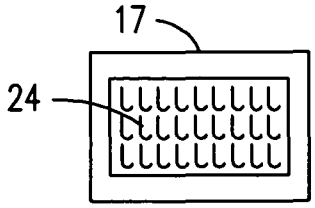


FIG. 9

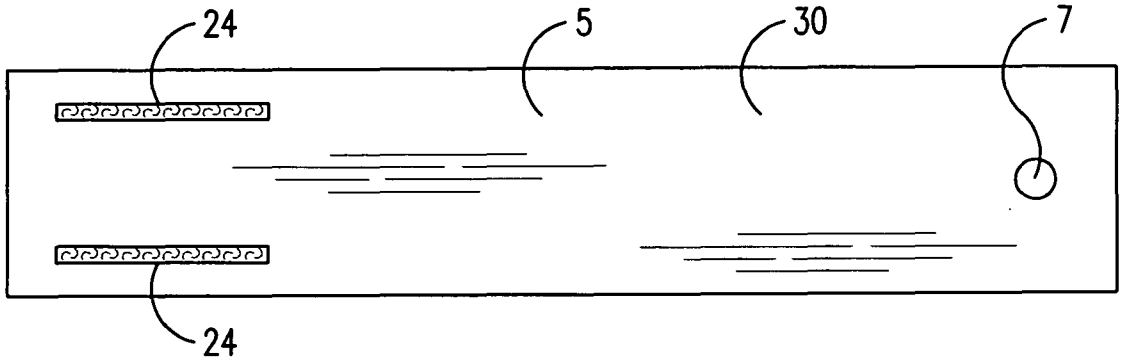


FIG. 8

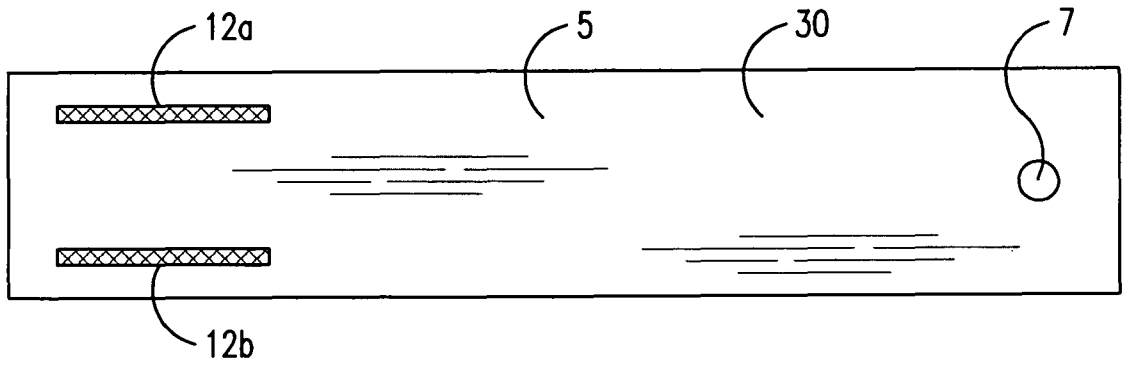


FIG. 10

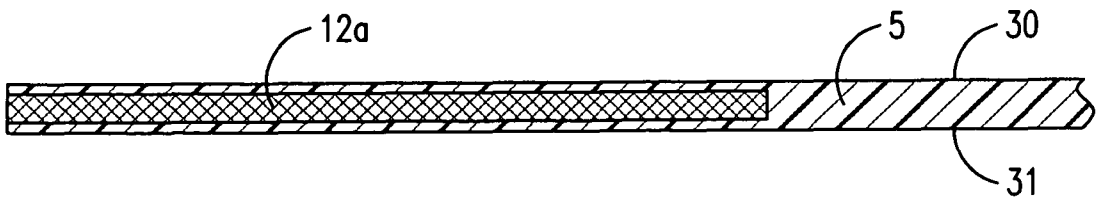


FIG. 11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US08/11296

A. CLASSIFICATION OF SUBJECT MATTER
IPC: **A63B 69/36**(2006.01)

USPC: 473/265,219,226
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 473/265, 219, 226

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
US-PGPUB; USPAT; USOCR: golf, putter, magnet, electromagnetic, sport, swing, mat, guide, attachment, arm

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,435,547 A (LEE) 25 July 1995, see entire document.	1-23
A	US 5,826, 874 A (TEITELL et al.) 27 October 1998, see entire document.	1-23

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of he art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
29 October 2008 (29.10.2008)

Date of mailing of the international search report
09 DEC 2008

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (571) 273-3201

Authorized officer
TOM DUNN
Telephone No. 571-272-1700

Form PCT/ISA/210 (second sheet) (April 2007)