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(54) Title: SPORTS EQUIPMENT

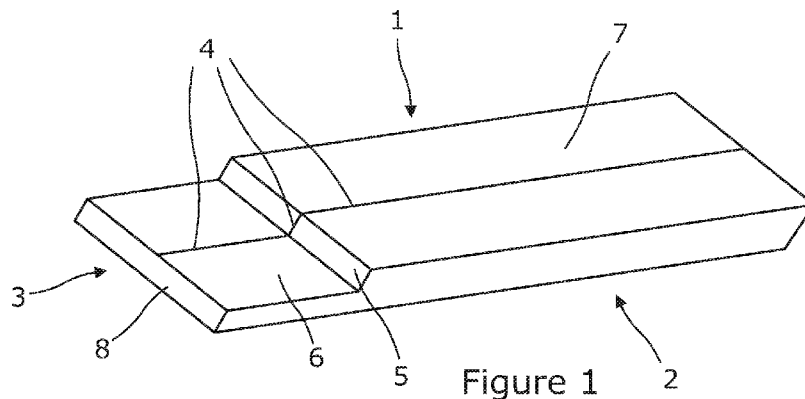


Figure 1

(57) Abstract: A snooker cue (9) or golf club head (13) comprising a sighting aid (4), a golf club comprising said golf club head,
and uses thereof.



Sports Equipment

5 **Field of the Invention**

The invention relates to improved sports equipment, more particularly to an improved snooker cue and an improved golf club head (and golf club incorporating that head), together with uses thereof.

10

Background to the Invention

Certain sports require an individual to be able to sight a straight line with high precision and to have the discipline and ability to do this consistently, particularly in targeting sports such as snooker, golf, bowls, darts and archery.

15

From the initial sighting, and when ready to play, or actually playing, the shot or stroke, one fundamental and commonly experienced problem is parallax error where the player sights across or parallel to the correct line of play. A common cause of the problem is eye dominance where one eye has an excessive influence in perceiving positions. Furthermore the level of this eye dominance may change over time. Parallax error may also be induced or compounded by bad stance, incorrect technique development, lack of awareness and/or discipline, bad compensating habits, or as a result of poor coaching practices.

25

Self evidently no coach or other person is able to see through the eyes of a player and, therefore, it is virtually impossible for a coach to diagnose parallax error effectively and advise on correction of it. The problem is, however, extremely important and significantly limits an individual's ability to improve his/her playing ability and fulfil his/her potential.

30

UK patent GB2319968 describes a sighting aid suitable for use in targeting sports such as, for example, snooker, golf (putting especially), bowls, darts or archery. The described sighting aid is a stand-alone device (portable or fixed installation), in the form of e.g. a rigid board (suitably of wood) for use in a coaching or training environment. For example, for golf coaching, the aid could be adapted for use as a playing surface from which the ball or other projectile to be aimed is launched (e.g. a board preferably at least a metre in length and at least 30 centimetres in width, preferably with an artificial putting green overlay material). For use as a snooker or pool sighting aid the upper surface of the board would suitably be overlaid with baize or similar material. The stand-alone sighting aid allows a user not only to perceive sighting parallax error offset but also to initiate practicing of shots/strokes to enable development of appropriate muscle memory to automatically compensate for inherent parallax error.

However, the sighting aid is of limited or no use to a user when not in a training or coaching environment i.e. in 'real-time' when playing a game of snooker or a round of golf. It is amongst the objects of the present invention to devise a solution to this problem.

Summary of the Invention

Accordingly, the inventor provides a snooker cue or golf club head comprising a sighting aid, said sighting aid comprising a sighting body having marked or formed thereon a straight sighting line extending longitudinally thereof, which line is intercepted part way along its length by an up-step or down-step, wherein said sighting line runs parallel to the length of the snooker cue or to the face of the golf club head and is visible to the user in use.

In preferred embodiments the sighting line extends for the majority or the entirety of length of the sighting body and/or the sighting aid and/or is intercepted part way along its length by a down-step.

In preferred embodiments of the golf club head the sighting line is located substantially in-line with the face of the head.

5 The inventor also provides a golf club comprising a golf club head as described above, the use of a snooker cue as described above to sight a shot or stroke in a cue sport, and the use of a golf club head/golf club as described above to prepare for a shot in golf.

10 Included within the scope of the invention is a snooker cue, golf club or golf club head or use thereof substantially as described herein with reference to and as illustrated by any appropriate combination of the accompanying drawings.

Brief Description of the Drawings

15 The invention will be described with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a sighting aid as viewed from the target-ward end;

20 Figure 2 is a plan view from above of a sighting aid;

Figure 3 is a side elevation view of a sighting aid;

Figure 4 is an end elevation view of the target-ward end of a sighting aid;

Figure 5 is a plan view of an embodiment of the snooker cue of the invention;

25 Figures 6 and 7 respectively show side elevation and perspective views of the same cue;

Figure 8 is a plan view of an embodiment of the golf club head of the invention; and

Figure 9 and 10 respectively show front elevation and perspective views of the same club head.

30

Detailed Description of the Invention

5 The inventor provides a snooker cue or golf club head comprising a sighting aid, said sighting aid comprising a sighting body having marked or formed thereon a straight sighting line extending longitudinally thereof, which line is intercepted
10 part way along its length by an up-step or (preferably) down-step, wherein said sighting line runs (substantially or exactly) parallel to the length of the snooker cue or to the face of the golf club head and is visible to the user in use. Note that the sighting line does not need to be marked or formed on the up-step or down-step itself.

15 A snooker cue includes any cue suitable for use in play of a cue sport e.g. snooker, pool or billiards and the term generally refers to an elongate and substantially tubular device whose diameter is greater towards a handle end and smaller towards the opposite, ball-striking end. A golf club head includes any head part that can attach to a shaft to form a golf club, and includes a 'Wood', 'Iron' or, preferably, a 'Putter' head. The sighting aid/body may be a discrete and either permanently or releasably attached part of the cue/head or it may be
20 integrated within the cue/head. For instance, the sighting body may simply be a particular area of the cue or club head. Releasable attachment means include e.g. magnetic or mechanical means (e.g. straps or clips).

25 Referring to Figures 1 to 4, a sighting aid of the sort to be used in the present invention comprises a body such as an elongate board (1) having a first major portion (7) extending for the majority of length of the sighting aid and being of a substantially uniform thickness (e.g. in the order of 0.1-5cm).

30 The target-ward end (8) of the sighting aid is a relatively thinner minor portion (6) of the board (1) and may suitably be, for example, less than half the thickness of the major portion (7) of the board and down-stepped (5) by that difference relative to the major portion (7). By this means a discontinuity in plane is formed between the upper surface of the major portion of the board and the upper surface of the

minor portion. This vertical differential between the two surfaces provides the means for visualisation of any parallax error. Note that the step needn't be exactly vertical.

5 A sighting line (4) is marked or otherwise formed on the sighting aid extending along the length of the board (1) and cutting straight across the line of plane discontinuity which latter is preferably substantially perpendicular to the sighting line.

10 Note that in stand-alone use of such a sighting aid the objective is to obtain a stance in which the sighting line (4) is not disrupted at the point of planar discontinuity. Where parallax error is present the portion of sighting line on the minor, target-ward, portion (6) of the sighting aid will be laterally offset relative to the portion of the sighting line (4) on the major portion (7) of the sighting aid.

15 The user should then make adjustments to compensate for this off-set so that it is no longer apparent.

Although the sighting line (4) is shown as extending continuously for the full length of the sighting aid this is not absolutely necessary since the line may be
20 replaced by a short marking simply traversing the line of plane discontinuity (down-step (5)) sufficient only to enable any offset to be perceived and compensated for. Furthermore, although illustrated as being of substantially uniform thickness in the respective major (7) and minor (6) portions this is not absolutely necessary since the principle relies centrally upon vertical difference
25 along the line of sight. Accordingly, the major portion (7) may, for example, be sloped upwardly to the discontinuity line and the discontinuity may comprise an up-step, not a down-step (5), to reach the target-ward end of the sighting aid.

30 The sighting aid/body used in the present invention is preferably elongate and the sighting aid, body and/or line is preferably no more than 50cm in length, preferably no more than 30cm in length, most preferably no more than 10cm in

length. The up-step or down-step is suitably at least 0.1cm in height, such as at least 0.5cm or 1cm in height, and preferably no more than 10cm in height (more preferably no more than 5cm in height). Preferably, the sighting line extends at least 1cm, and preferably at least 3cm, before and/or beyond the up-step or down-
5 step. Preferably the sighting line is at least 1mm wide, preferably no more than 2cm wide.

The Snooker Cue

10 Figure 5 shows a plan view of an embodiment of the snooker cue of the invention (9), wherein the sighting line (4) runs parallel to the length of the cue, as defined here for example by a line (10) extending from the centre of its tip (ball-striking end) (11) to the centre of its base (handle end) (12). Figure 6 shows a side
15 elevation view of the same cue, wherein the sighting body/line is sunk into the profile of the cue yet remains visible to the user in use (as it would with any positioning on a surface of the length of the cue, sunken or otherwise). Figure 7 shows a perspective view of the cue, with offline sighting by the user. Note that in another embodiment only the minor portion (6) of the sighting aid is sunk into the profile of the cue, wherein the plane of major portion (7) is e.g. in-line with the
20 profile of the cue.

The sighting aid/body is shown as a discrete part that can be permanently or releasably attached to a recess within the cue. Note however that the embodied cue could be formed simply by sculpting/markings a conventional cue (in which case the sighting body becomes merely a particular area of the cue). Note also that
25 the sighting aid/body/line is preferably located within the middle third of the cue length.

The inventor provides the use of a snooker cue according to the invention to sight (or 'aim') a shot or stroke in a cue sport, such as snooker, pool or billiards (said shot/stroke preferably to be played with the said same cue). The user can sight the
30 shot/stroke using the cue of the invention, by viewing its sighting line, before,

during and/or after taking their playing stance. In such a way the cue of the invention enables a user to sight a shot (and e.g. correct or exclude any parallax error) in real time i.e. whilst preparing for and/or playing a shot in a game of snooker. In such use e.g. the user aligns the cue with the direction of the target from the user, views the sighting line while attempting to sight the target, and determines from any off-set of the portion of the sighting line before the step relative to the portion of that sighting line after step whether and to what extent the attempt of the user to sight the target is in error. The user can then adjust the cue alignment to remove any error (i.e. until no off-set is seen), or maintain the cue alignment to exclude error, as the case may be.

The Golf Club

Figures 8 and 9 show plan and front elevation views (respectively) of an embodiment of the golf club head of the invention, a putter head (13), wherein the sighting line (4) runs parallel to and specifically in-line with the face (14) of the putter head. (15) marks the location of the attachment point for the shaft of a club. To be visible in use the sighting line will usually need to be on the 'top' (in use) surface (16) of the putter head (rather than the face, back or base of the club head). The sighting line is shown at the toe of the putter head (as is preferred), rather than e.g. at the heel. Here, the target-ward end (8) of the sighting aid faces away from the user in use (and on a line that is perpendicular to the target once the club face has been correctly aligned). To position the sighting line (4) in-line with the putter face, a stepped protrusion (17) is formed at the toe (wherein the protrusion protrudes away from the putter face, towards the direction in which a golf ball is to be played). A similar stepped protrusion (18) is (as preferred) placed at the heel to balance the club head. Figure 10 shows a side perspective view of the putter head, with sighting lines joined, indicating a square putter face. Also shown is a club shaft attached to the putter head.

30

The inventor provides the use of a golf club head or golf club according to the

invention to prepare for a shot in golf (said shot preferably to be played with the said same golf club/head). In particular, said preparation is to ensure that the face of the club head is held at a perpendicular angle to the line in which the shot is to be played (e.g. line to target). The user can 'square-up' the club head face using
5 the club/head of the invention, by viewing its sighting line, before, during and/or after taking their playing stance. In such a way the club/head of the invention enables a user to correctly align a shot (and e.g. correct parallax error) in real time i.e. immediately prior to playing a shot in a game of golf. The correction of parallax error (offset) is substantially as described above. Note that by using the
10 club/head of the invention to 'square-up' the club head the user is also, and simultaneously, able to ensure a correct ball position in stance (e.g. a ball position on the user's line of sight).

CLAIMS

1. A snooker cue or golf club head comprising a sighting aid, said sighting aid comprising a sighting body having marked or formed thereon a straight sighting line extending longitudinally thereof, which line is intercepted part way
5 along its length by an up-step or down-step, wherein said sighting line runs parallel to the length of the snooker cue or to the face of the golf club head and is visible to the user in use.
- 10 2. A snooker cue or golf club head according to claim 1 wherein the sighting line extends for the majority or the entirety of length of the sighting body and/or the sighting aid.
- 15 3. A snooker cue or golf club head according to claim 1 or claim 2 wherein the sighting line is intercepted part way along its length by a down-step.
4. A golf club head according to any one of claims 1 to 3 wherein the sighting line is located substantially in-line with the face of the head.
- 20 5. A golf club comprising a golf club head according to any one of claims 1 to 4.
6. Use of a snooker cue according to any one of claims 1 to 3 to sight a shot or stroke in a cue sport.
- 25 7. Use of a golf club head according to any one of claims 1 to 4 or a golf club according to claim 5 to prepare for a shot in golf.
- 30 8. A snooker cue, golf club or golf club head or use thereof substantially as hereinbefore described with reference to the accompanying drawings.

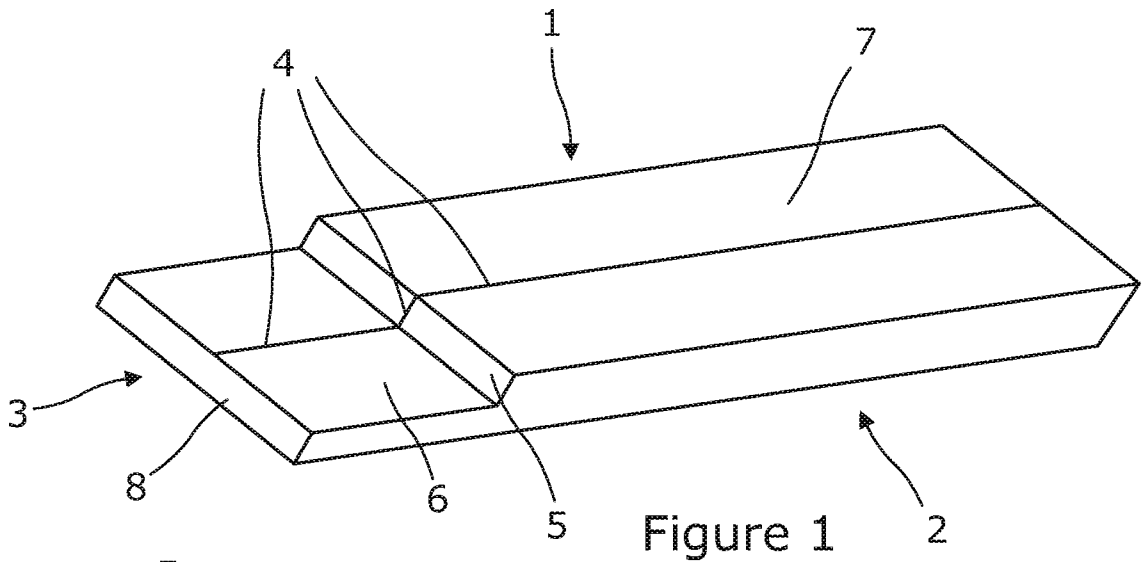


Figure 1

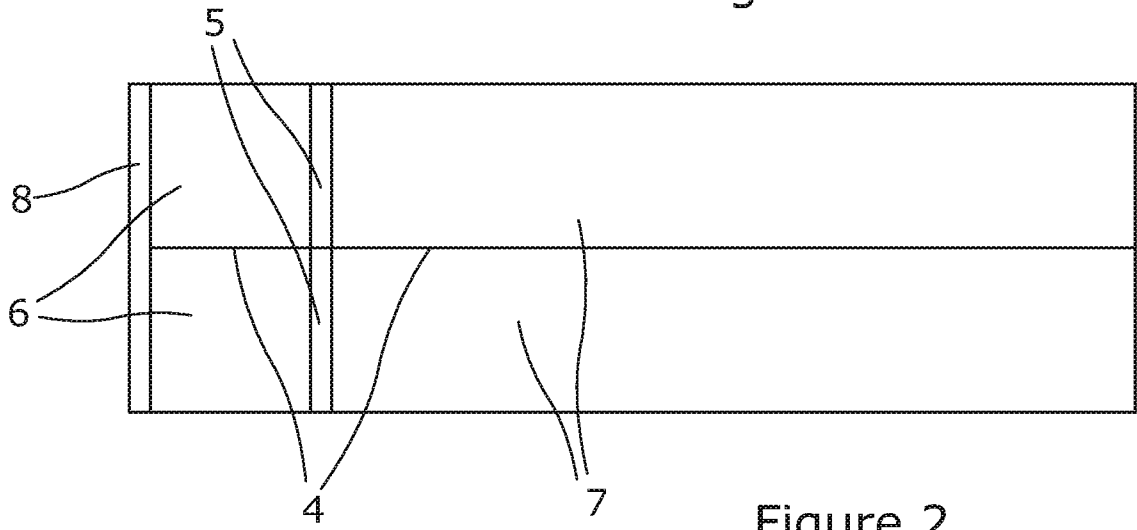


Figure 2



Figure 3

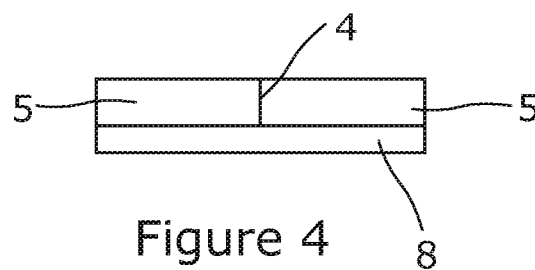


Figure 4

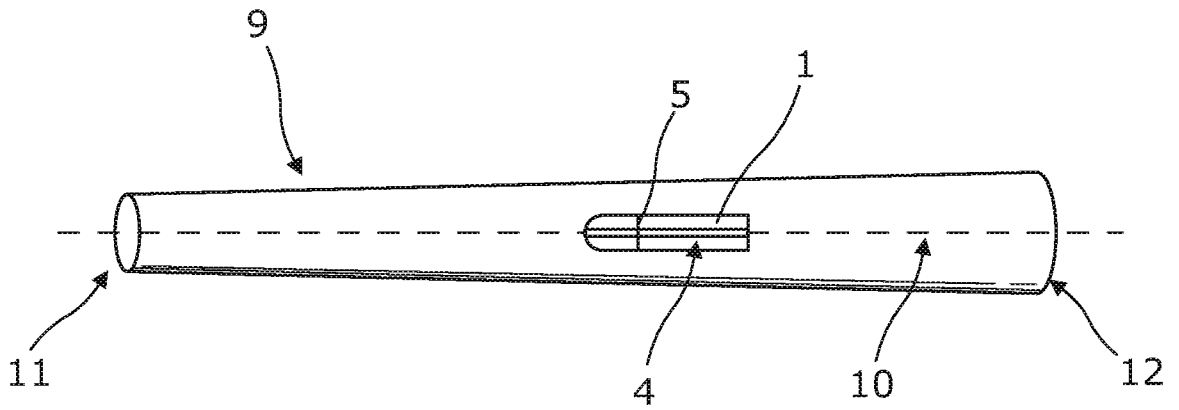


Figure 5

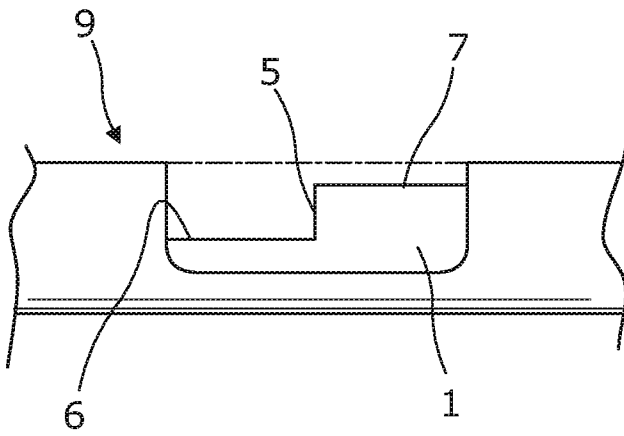


Figure 6

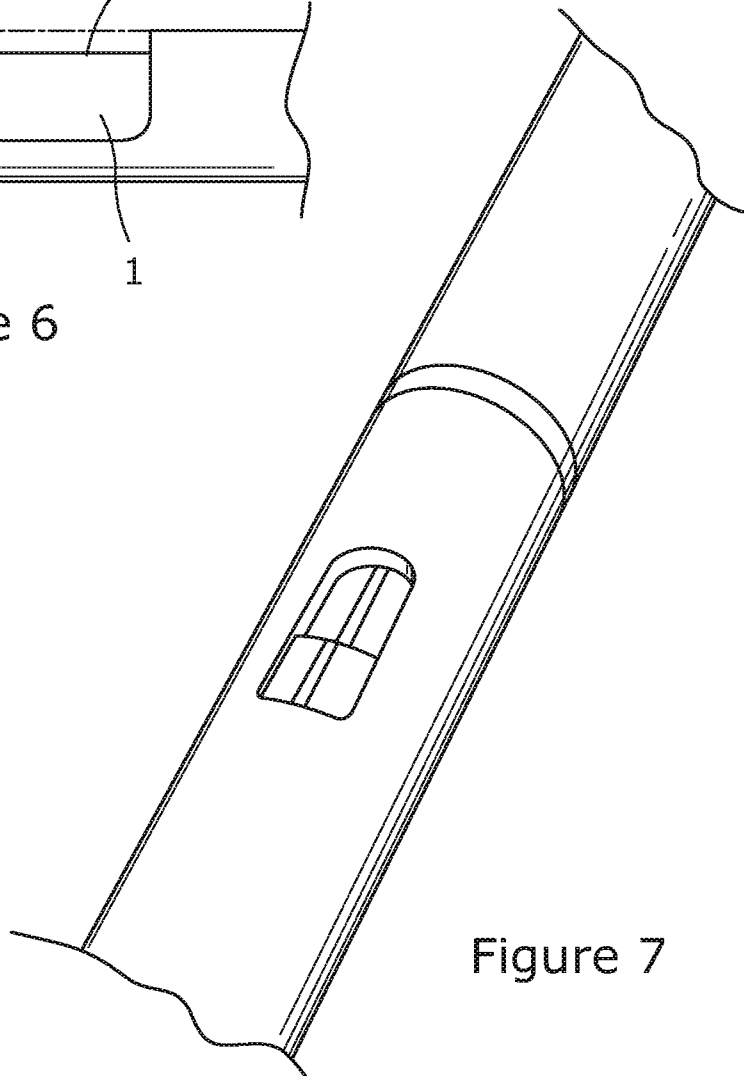
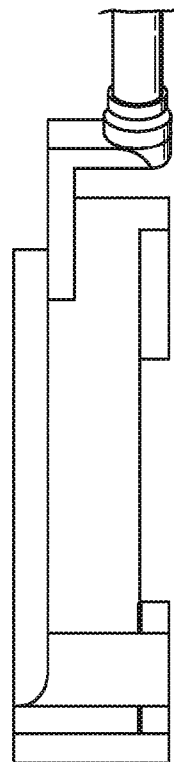
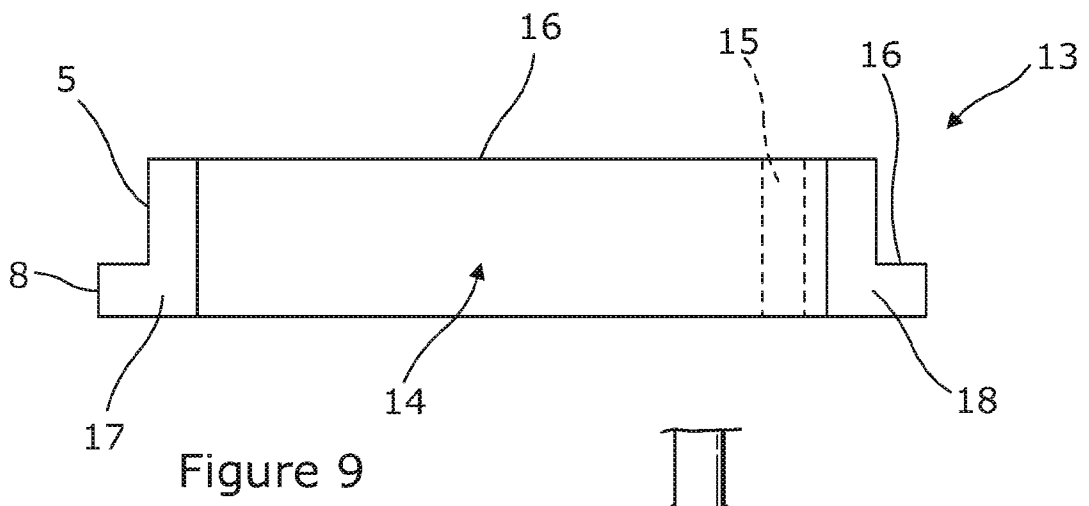
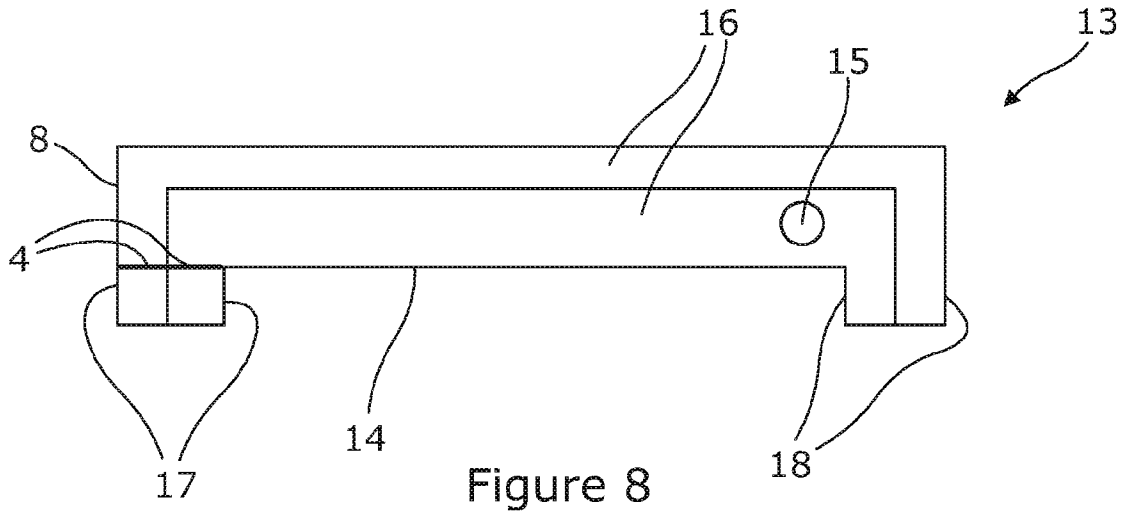


Figure 7



INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2014/051919

A. CLASSIFICATION OF SUBJECT MATTER
 INV. A63B69/36 A63B53/04 A63D15/08
 ADD. A63B71/06

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)
 A63B A63D

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)
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 200 227 B1 (SERY JOSEPH [US]) 13 March 2001 (2001-03-13) columns 2-3; figures -----	1-5,7
X	US 4 458 900 A (ANTONIOUS ANTHONY J [US]) 10 July 1984 (1984-07-10) claims; figures -----	1-5,7
X	US 4 722 528 A (TSAO THOMAS K [US]) 2 February 1988 (1988-02-02) column 7, lines 7-31; figures 1-2 -----	1-5,7
X	US 4 527 799 A (SOLHEIM KASTEN [US]) 9 July 1985 (1985-07-09) column 3, lines 46-54; figures 1-2 -----	1-5,7
	-/--	

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

* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search 8 September 2014	Date of mailing of the international search report 22/09/2014
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Herry, Manuel
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2014/051919

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: 8
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2014/051919

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 149 670 A (PERFECT CHRISTOPHER JOHN) 19 June 1985 (1985-06-19) figures 1-2 -----	1-5,7
Y	GB 2 319 968 A (FEENEY STEPHEN PATRICK [GB]) 10 June 1998 (1998-06-10) the whole document -----	1-4,6
Y	GB 399 087 A (WILLIAM SPENDLOVE) 28 September 1933 (1933-09-28) the whole document -----	1-4,6
Y	US 2006/030418 A1 (EVANS KIRK B [US] ET AL) 9 February 2006 (2006-02-09) the whole document -----	1-4,6

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2014/051919

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6200227	B1	13-03-2001	NONE
US 4458900	A	10-07-1984	NONE
US 4722528	A	02-02-1988	NONE
US 4527799	A	09-07-1985	NONE
GB 2149670	A	19-06-1985	NONE
GB 2319968	A	10-06-1998	NONE
GB 399087	A	28-09-1933	NONE
US 2006030418	A1	09-02-2006	NONE

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 8

Claim 8 contains references to the drawings, and fails to indicate the technical characteristics of the claimed subject-matter. This claim is thus so unclear (Article 6 PCT), that no meaningful opinion can be given as to the novelty and inventive step.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.