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(54) **SETTING INDICATOR FOR GOLF CLUB**

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(57) **ABSTRACT**

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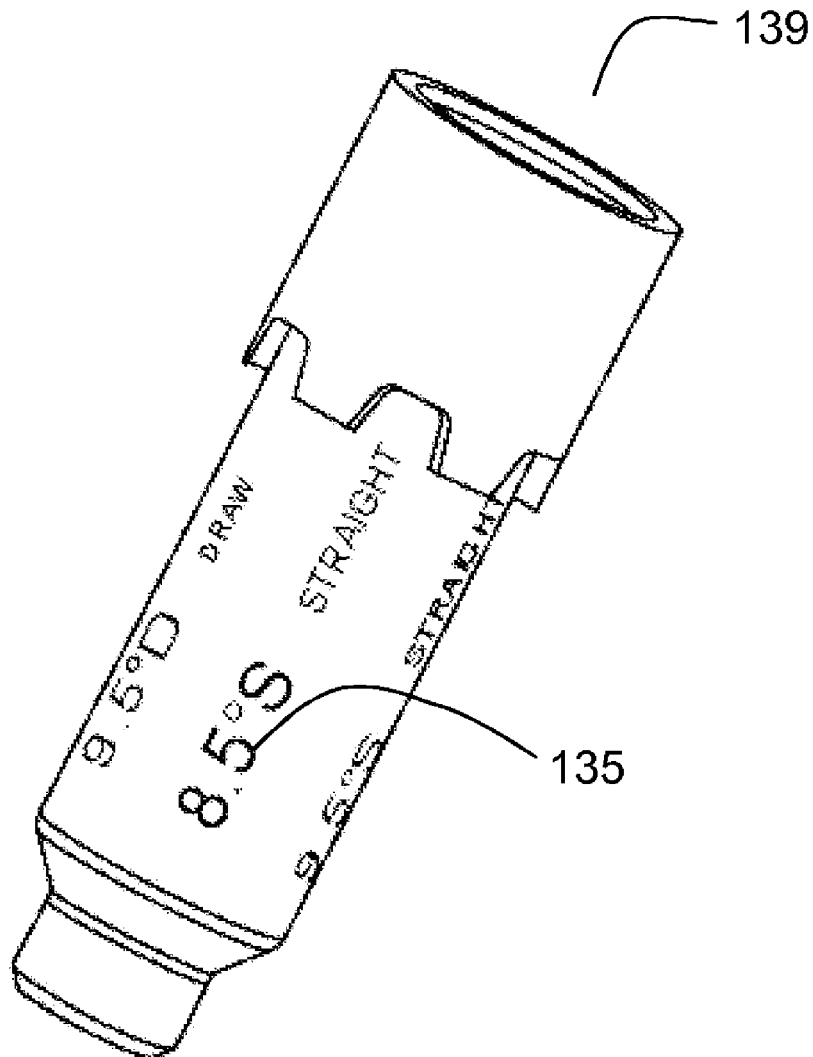
The invention generally relates to a setting indicator for a golf club having an adjustable attribute. The invention provides a component to serve as a setting indicator or setting display device for a golf club or a golf club having a setting indicator. The setting indicator includes a window and an adjustment mechanism configured to provide a golf club with a selected attribute while also displaying an indicia through the window to provide information about the selected attribute.

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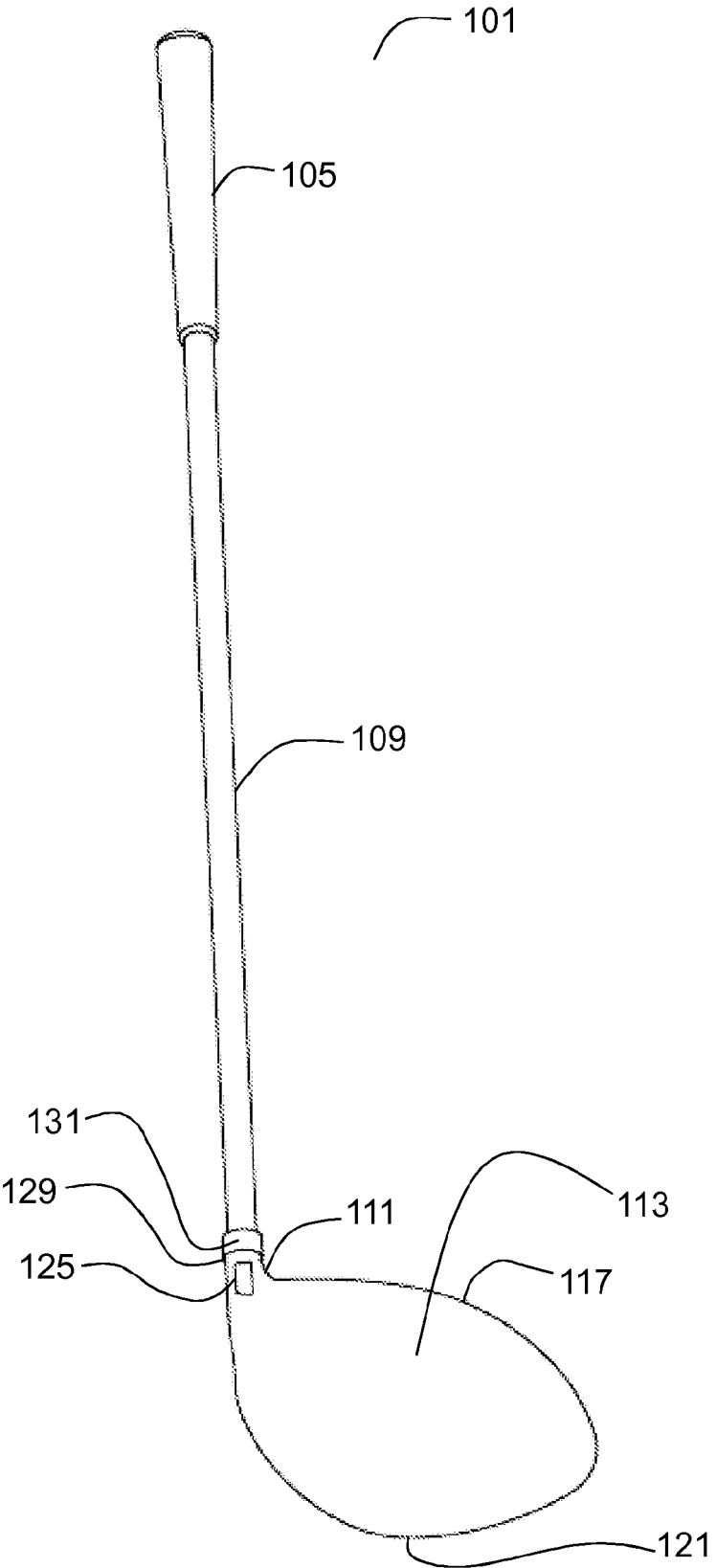


Figure 1

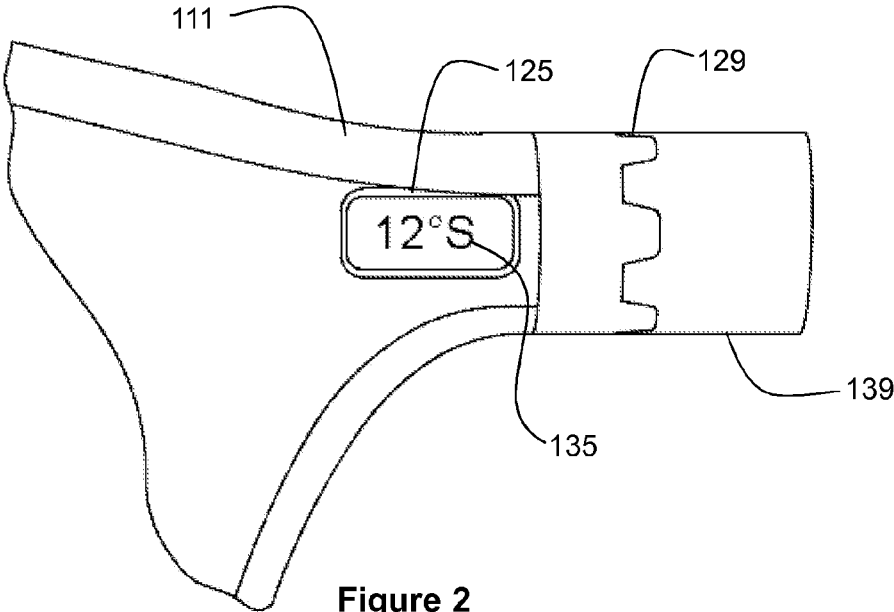


Figure 2

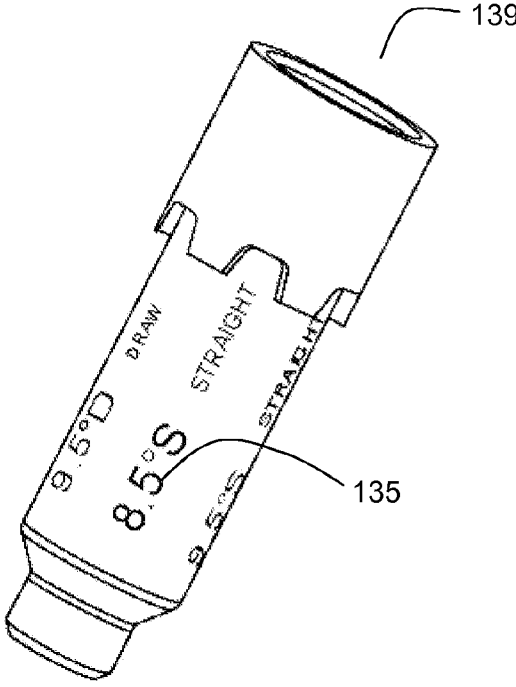


Figure 3

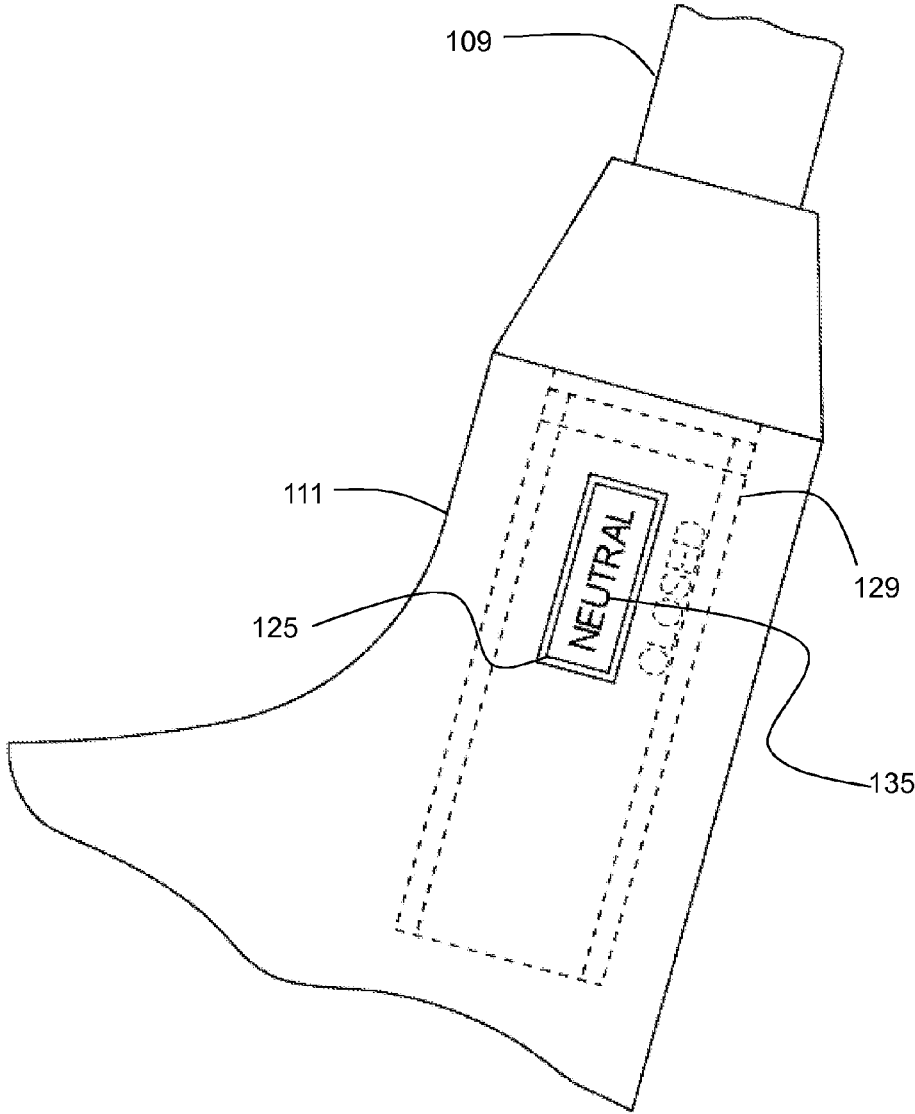


Figure 4

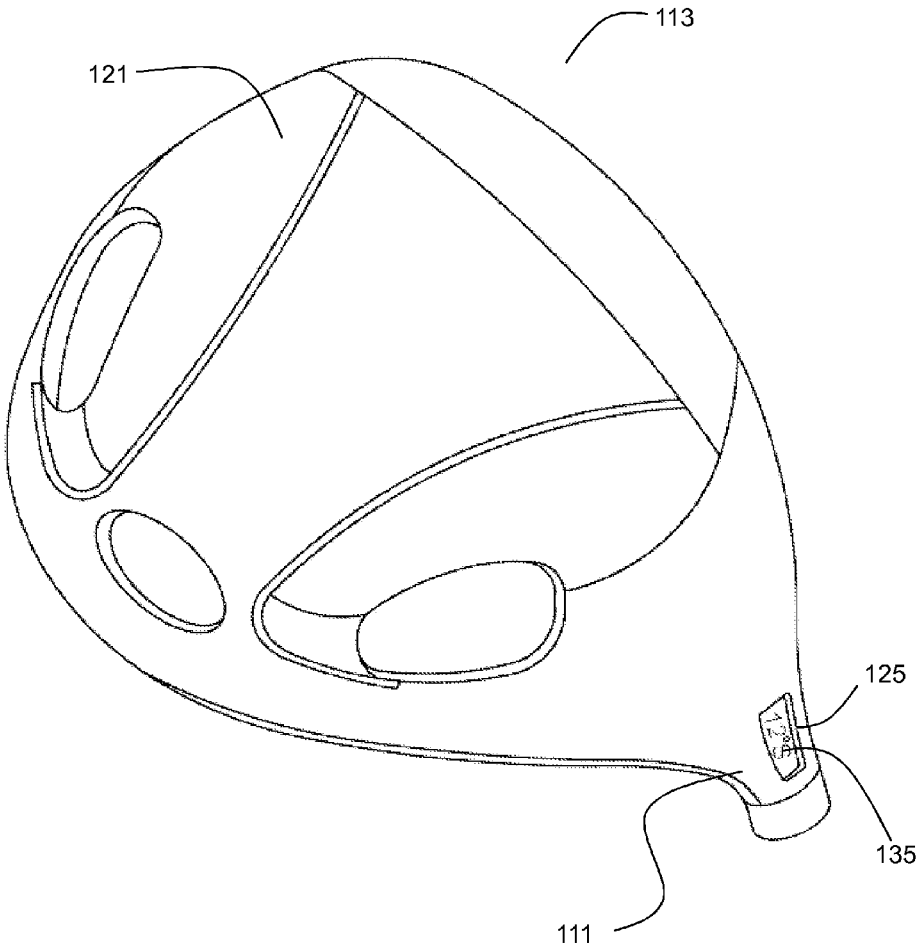


Figure 5

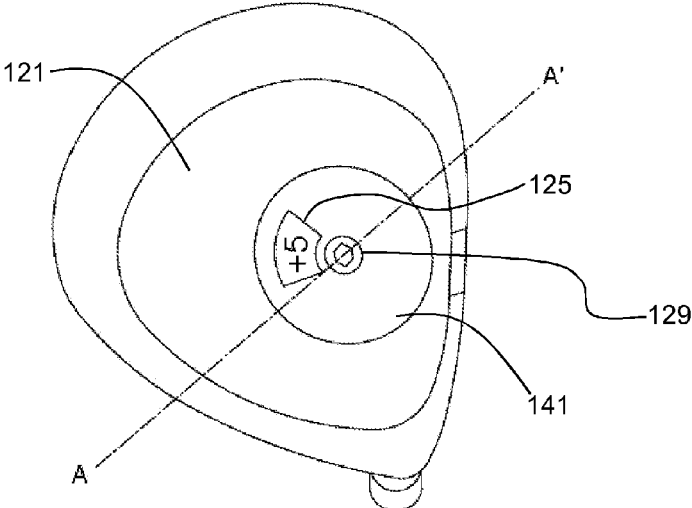


Figure 6

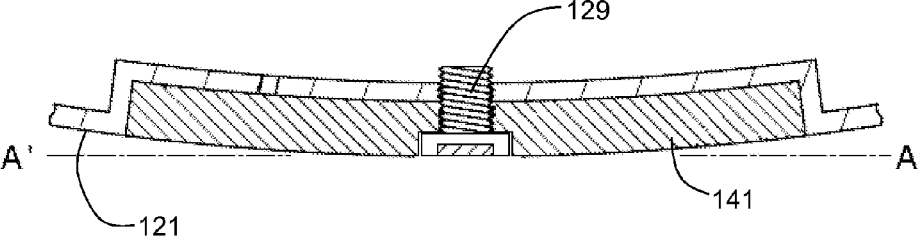


Figure 7

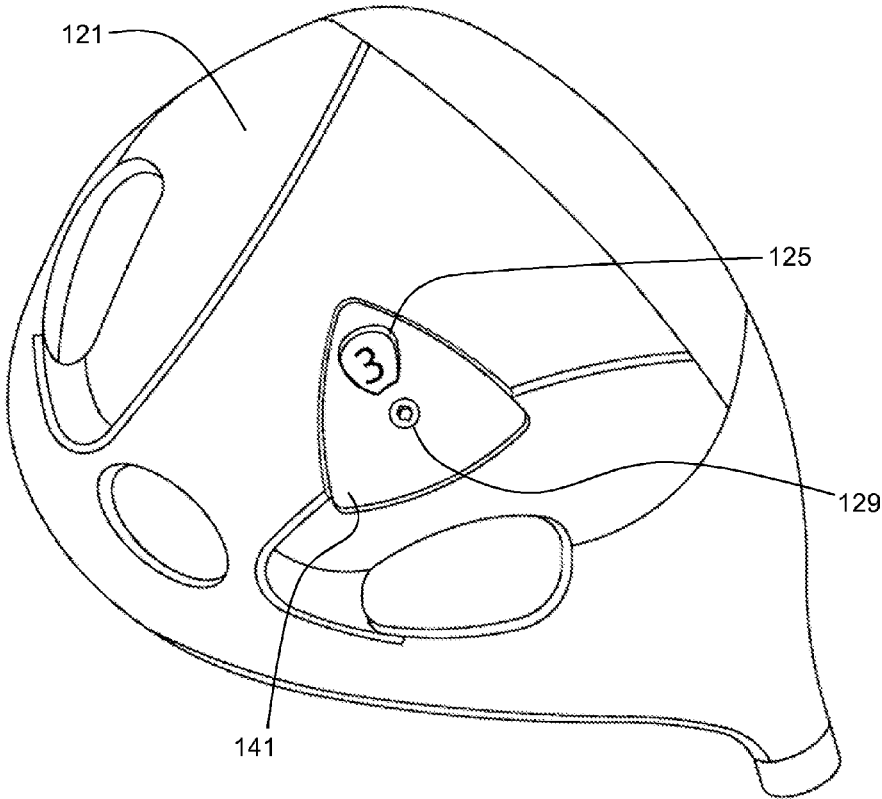


Figure 8

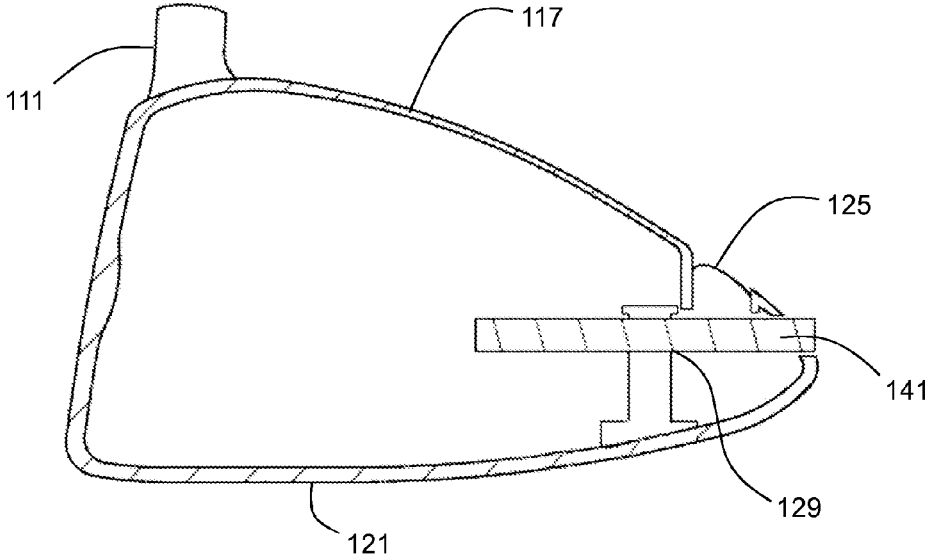


Figure 9

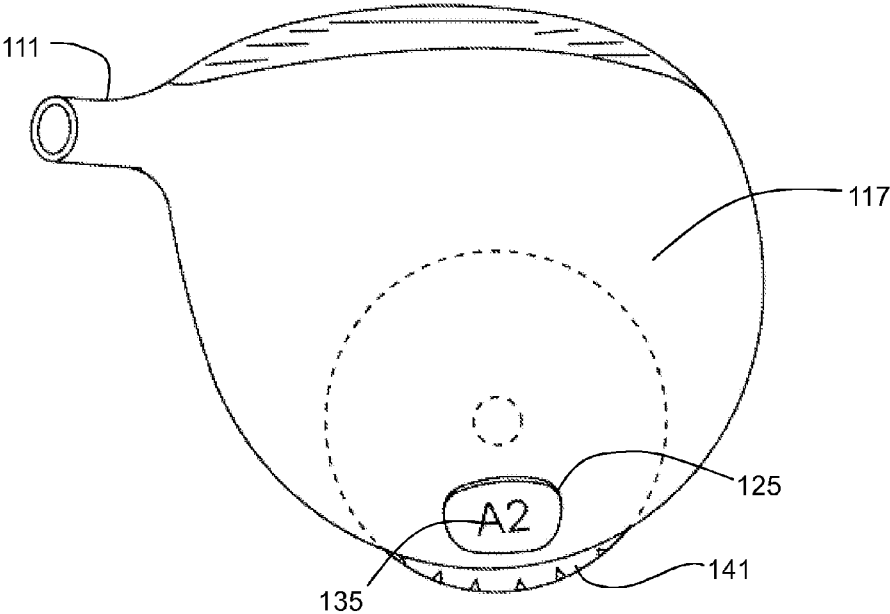


Figure 10

SETTING INDICATOR FOR GOLF CLUB

FIELD OF THE INVENTION

[0001] The invention generally relates to a setting indicator for a golf club having an adjustable attribute.

BACKGROUND

[0002] Existing golf club technology offers players a variety of ways to adjust attributes of their clubs. For example, some club heads are designed to be coupled to interchangeable or repositionable shafts that let a player select a certain loft or face angle. Some golf clubs let a player adjust the center of gravity or moment of inertia of the club head, for instance, by including repositionable weight members in the club head.

[0003] Providing a golf club with an adjustable attribute presents a number of problems. Some setting adjustments involve no big changes to an overall shape of a club, and thus present no obvious visual indication of the effective setting. For example, closing a face angle may involve only a slight rotation around a shaft. Shifting a center of gravity may involve moving a weight contained entirely within a club head. When such settings are adjusted, some indication is needed of the effective setting.

[0004] Further, a golfer may not know enough physics to know the right weight distribution or face angle to improve his or her game. Even if a golfer does know, for example, that a slice can be corrected by closing the face angle, the golfer may not use the adjustment mechanism if it offers a number of settings and no clear indication of the purpose of each one.

[0005] Providing a graphic or scale as a setting indicator does not fully solve the problem. Generally, a scale or graphic is provided showing every possible setting, thus giving too much information. In some cases, the only indication of the effective setting is a small pointing mark that moves relative to the scale (e.g., FIG. 2 of U.S. Pat. No. 2,451,262, FIG. 6 of U.S. Pat. No. 2,495,444, or FIG. 3 of U.S. Pat. No. 3,096,982). In other cases, a golfer is apparently expected to know that a specific position within a scale indicates an effective setting. U.S. Pat. No. 3,931,969 reports an adjustable head with a scale located outside of and above the club head, wherein the mechanism is very large and clumsily protrudes from the club, causing a very high center of gravity at address, as well as requiring a coupling mechanism separating a shaft into more than one component, with a resulting decrease in strength and playability. In more modern clubs, a scale is sometimes printed very small and appears to include only arcane technical details. Some golfers perceive these as vestiges of manufacturing and ignore them. Thus, while much research and development effort goes into developing mechanisms for adjusting golf clubs, much potential benefit of this effort is not yet realized due to existing setting indicators.

SUMMARY

[0006] The invention provides a setting indicator that presents information to a golfer about the effective setting of an adjustable attribute of the golf club. By including a window through a portion of an adjustment mechanism that moves relative to another portion that underlies it, markings can be put on the underlying portion such that a specific marking is revealed through the window while the golf club is in a specific configuration. The specific marking can communi-

cate an effect of the adjusted setting in terms that aid the golfer, for example, in using the adjustable club to improve his or her game.

[0007] The invention provides a setting indicator that helps a golfer realize the full potential benefit of an adjustable attribute, particularly, for example, where an adjustment mechanism does not otherwise substantially affect the appearance of a golf club. As more adjustment mechanisms operate without an obvious visual affect on club configuration—for example, by moveable weights inside of a club head; rotation of disks, shafts, or other elements with rotational symmetry around their axes; or very subtle changes in shaft angles—a setting indicator of the invention communicates information about an effective setting to a golfer.

[0008] A further advantage of setting indicators according to the present invention is that they can be configured so that they innately reveal the present, effective setting of a golf club (i.e., a user does not have to set the golf club, and then separately set the indicator to indicate the golf club setting). Setting indicators of the present invention can innately reveal an effective setting of a golf club by including a window or aperture through a portion of an adjustment mechanism that moves relative to another portion, the other portion having indicia printed thereon to be revealed through the window or aperture.

[0009] An advantage of setting indicators of the invention lies in their ability to be integrated smoothly into a golf club having an overall “standard”, or familiar, appearance. Setting indicators according to the present invention need not be associated with clumsy or weighty add-ons, or awkward club constructions that would result in a club with impaired properties such as a feeble shaft incapable of full-force drives or a grossly unusual weight distribution causing wonky, wall-eyed putts.

[0010] Another advantage of setting indicators results because the invention exploits an aspect of adjustment mechanisms whereby one portion of the mechanism move relative to another. By including multiple indicia or a full scale on one portion, and a limiting window or aperture on the other, the mechanism can reveal only the indicia or portion of the scale relevant to the effective setting of the club. The solid portion surrounding the window or aperture can be configured to occlude any indicia other than that pertaining to the effective setting, thereby solving the problem of too much information, avoiding golfer confusion, and increasing a golfer’s ability to benefit from the advantages of an adjustable club.

[0011] The invention provides a window on a surface of a component of a golf club head, the component overlaying an interior surface, wherein the components participate in a golf club adjustment mechanism. The mechanism allows the club to be adjusted between a number N of different settings while simultaneously repositioning a corresponding one of N indicia to be visible through the window, thereby indicating to a user a current setting of the club head.

[0012] In certain embodiments, the window is on the hosel revealing indicia on an end of a shaft, and the shaft can be connected to the club head in a number of positions each rotationally offset from the other around a hosel axis. The portion of the shaft bearing the indicia are inside of the hosel or the club head when the club is in play, and one of the indicia is viewable through the window. Thus, other than the window, the club bears no display of an adjustment mechanism. The window the invention provides the valuable benefit of com-

municating to a player a current setting of a club in a easy-to-understand, foolproof way. A player can pick up the club, and the only information visible reports the present setting of the club. The window can be open (i.e., open-air or pass-through) or enclosed by a transparent or translucent material. The transparent or translucent material can include a lens-shaped facet, for example to magnify or de-magnify a view through the window. The indicia can be colored, luminescent, illuminated, engraved, embossed, printed, etched, or any combination thereof or characterized by any other useful property.

[0013] In certain aspects, the invention provides a component to serve as a setting indicator or setting display device for a golf club. The setting display device includes an aperture through a surface of the component and an adjustment mechanism configured to couple the component to a second component to provide a golf club with a selected attribute setting while also displaying an indicia through the aperture to provide information about the selected attribute. The aperture can be in the hosel with the indicia printed on the shaft or a sleeve-like member for receiving the shaft into the hosel. The shaft can be, for example, a removable shaft, with an indicia at a club-head end and a grip at a distal end. In some embodiments, the shaft region of a golf club comprises a monolithically formed shaft member including a proximal portion configured to be within a hosel of a club and a distal portion configured to be within a grip of a club.

[0014] In some embodiments, the invention supplies a club head for a golf club, the club head including an aperture to provide a setting indicator. The club head is configured to cooperate with a shaft component, for example by receiving a proximal portion of the shaft component within a hosel area such that indicia on the proximal portion are displayed through the aperture. The indicia can be on a surface of the shaft member that extends to the grip region of a club, or the indicia can be on a sleeve member configured to receive a proximal end of the shaft into a hosel, wherein the sleeve member is repositionable relative to the club head. Club heads, for example, according to these embodiments, are provided that can be coupled to a variety of different shafts (i.e., interchangeable club/shaft system), that can be coupled to a shaft in a variety of positions (i.e., repositionable shaft system), or both. In either system, the shaft or a cooperating sleeve member can include indicia that, when the shaft is coupled to the head to form a playable golf club, a portion (e.g., a specific number, picture, or word) of the indicia is visible through the aperture to reveal information about the attributes of the assembled club.

[0015] The aperture can have the form of a window through the club head. Window and aperture are generally used interchangeably. Window generally highlights a see-through aspect of an aperture. Aperture generally highlights an opening through a material for the passage of light. For example, a transparent material having paint on a surface surrounding a portion of the surface having no paint provides an aperture or window. A material wall, or generally planar (flat or curved) two-dimensional structure of any thickness, having a discontinuity in material or a discontinuity in opacity through which an image can be seen can provide a window or an aperture. In some embodiments, a window or aperture is provided including a region of transparent material set into a region of surrounding material, regardless of the opacity or transparency of the surrounding material. A suitable transparent material can be glass, plastic, cellophane, or crystal, for

example. A transparent material element can be fixed into a surround element by any means known in the art, including, for example, cement, glue laser welding, heat stake, snap-fit, press-fit, co-molding, a gasket, and threading.

[0016] The invention generally provides a component with a window through it such that indicia on a second component can be viewed through the window in an assembled club. In certain embodiments, one of the two components is rotatable (relative to the other) around an axis to supply different configurations in a playable golf club. For example, in some embodiments, a shaft is rotatable around a shaft axis. In certain embodiments, a club head includes a rotatable member, such as a disc or a device that preferably has rotational symmetry, configured on or within the head to be rotated, for example, to redistribute weight or to modulate how a club sits on the ground at address. The window can be in either the rotatable member, such that a portion of the club head bearing indicia is viewable through the window, or the window can be in a portion of the club head, such that the rotatable member displays indicia through the window. The rotatable member can optionally be continuously rotatable, e.g., capable of traveling through any number of rotations in either direction. One advantage of the invention appreciable using a rotatable member as an example is that a setting indicator can be provided wherein changing the setting of the adjustable attribute does not substantially change an external shape of the golf club.

[0017] In certain aspects, the invention provides a setting display device for a golf club. The setting display device has a window in a window member, and the window member can be positioned relative to an indicator member to supply a desired configuration of the golf club. In the desired configuration, the window reveals indicia on the indicator member to give information about the selected configuration. Using this device, a golfer can read information about an effective setting of a golf club.

[0018] The window can be in a hosel, or elsewhere on the golf club. With the window member on the hosel, different shafts or a shaft in different positions can be received into the hosel to provide two, or even more, different configuration. In each configuration, a golfer can view an indicator through the window specific to the effective configuration.

[0019] The invention provides a setting display device for golf clubs having selectable configurations. Selectable configurations according to the invention include loft, face angle, location of center of gravity, mass, shaft length, and similar. For example, a shaft can be coupled to a club head through an adjustment mechanism allowing a golfer to choose from two or more face angles, and the display device can provide information about the face angle. The information could be, for example, marks that indicate an open, neutral, or closed face angle. The invention advantageously provides a display device that does not need independent setting. When a golf club is configured in a first setting, the display device reveals information about the first setting, and when the golf club is configured in another setting, the display device reveals information about that setting. For example, the display device can cooperate with an adjustment mechanism to allow a golfer to shift a center of gravity or moment of inertia among two or more positions, with the display so indicating.

[0020] In certain aspects, the invention provides a golf club with a setting indicator. The golf club generally has a shaft and a head, as well as an opening through a portion of the head and an adjustment mechanism that provides a first configura-

ration while revealing a first indicia through the opening and provides a second configuration while revealing a second indicia through the opening. The adjustment mechanism can offer two or more values for an attribute such as loft, face angle, moment of inertia, center of gravity, or weight. The adjustment mechanism can include a substantially round member, or radially symmetric member (e.g., triangular or cross-shaped) rotatable about an axis to change configurations. By including a center of gravity spaced away from the axis of rotation, a rotatable member can provide two or more different centers of gravity for a club head.

[0021] In certain embodiments, the club head includes a repositionable member positioned between the sole and the crown, or on an outer (lower) surface of the sole. Where the repositionable member is positioned between the sole and the crown, a window may be provided through the overall shell of a club head to reveal indicia on the repositionable member. Where the repositionable member is located on an outer surface of the shell, a window may be provided through the repositionable member to reveal indicia on the surface of the shell. A repositionable member can be slideable, rotatable, or both.

[0022] One advantage of the setting indicator of the present invention is that it can be configured to reveal only an indicia while providing the corresponding configuration and reveal an indicia only while providing the corresponding configuration, for any number of indicia/configuration combinations.

[0023] In certain aspects, the invention provides a golf club with an adjustable attribute, in which a head of the club has a window configured to reveal an indicia part of an adjustment mechanism. When the adjust mechanism is in a position to establish a particular value for the attribute, a corresponding indicia is displayed through the window. The window can be an aperture or window in a window member. The adjustable attribute can be any of face angle, loft, center of gravity, mass, moment of inertia, shaft length, or similar. The indicia can be printed matter on a surface.

[0024] In certain embodiments, the window is in a hosel of the head and the adjustment mechanism includes part of a shaft. The hosel receives the end of the shaft and indicia are printed on the shaft—either directly on the primary shaft member, or on a connective member formed to aid in coupling the primary shaft member to the club head.

BRIEF DESCRIPTION OF THE DRAWINGS

[0025] FIG. 1 is a side view of a golf club showing a setting indicator according to certain embodiments of the invention.

[0026] FIG. 2 is a detail view of a setting indicator of certain embodiments of the invention.

[0027] FIG. 3 shows a component of an adjustment mechanism according to certain embodiments of the invention.

[0028] FIG. 4 is a detail view of a setting indicator of certain embodiments of the invention.

[0029] FIG. 5 is a bottom view of a golf club head according to certain embodiments of the invention.

[0030] FIG. 6 is a bottom view of a golf club head according to certain embodiments of the invention.

[0031] FIG. 7 is a cross-sectional view of an adjustment mechanism according to certain embodiments of the invention.

[0032] FIG. 8 is a bottom view of a golf club head according to certain embodiments of the invention.

[0033] FIG. 9 is a cross-sectional view of a golf club head according to certain embodiments of the invention.

[0034] FIG. 10 is a top view of a golf club head according to certain embodiments of the invention.

DETAILED DESCRIPTION

[0035] The invention generally relates to setting indicators for adjustment mechanisms for golf clubs having an adjustable attribute. FIG. 1 shows golf club 101 with an exemplary setting indicator according to certain embodiments of the invention.

[0036] As shown in FIG. 1, club 101 generally has a grip 105 at an end of a shaft 109, shaft 109 being connected via hosel 111 to club head 113. Hosel 111 may be adorned with a ferrule 131. Club head 113 can be described as having a crown 117, facing upwards when the club is at address, and a sole 121, generally facing downwards when a club is at address. FIG. 1 shows club 101 as a driver. However, a setting indicator is provided for any kind of golf club.

[0037] A setting indicator generally includes a window 125 and an adjustment mechanism 129. Window 125 can be any shape and can be positioned anywhere on a golf club. For example, window 125 can be on the shaft, grip, or head of a club. Window 125 could be on the grip butt cap or could reveal an indicator that depicts the setting of an electronic device associated with a club. As will be seen herein, a variety of adjustment mechanisms are improved through inclusion of a setting indicator of the invention.

[0038] Devices and components of the invention can be fabricated by any method known in the art. Exemplary methods for making a component of a golf club include molding, forging, and laser metal sintering. Making components via laser metal sintering is discussed in Soracco, P., and Clausen, K., Method of Making Golf Clubs, U.S. Pat. No. 8,007,373 and Soracco, P., and Clausen, K., Method of Making Golf Clubs, U.S. Pub. 2011/0277313, both herein incorporated by reference in their entirety. Methods of making golf clubs or club components according to embodiments of the invention are disclosed, for example, in Hartwell, B., et al., Golf Club Head with Multi-Component Construction, U.S. Pub. 2011/0152003; Hirsch, R., and Soracco, P., Metal Injection Molded Putter, U.S. Pat. No. 8,007,370; and Breier, J., et al., Metal Wood Golf Club Head, U.S. Pub. 2008/0227564. Golf clubs including adjustable mechanisms, or adjustable mechanisms for golf clubs, suitable for operation with the invention, are disclosed in Clausen, K., and Roberts, D., Iron-Type Golf Clubs, U.S. Pub. 2010/0041493; Clausen, K., and Soracco, P., Quick Release Connection System for Golf Clubs, U.S. Pub. 2011/0098128; and Liang, M., et al., Weight Adjusting Structure of Golf Club Head, U.S. Pat. No. 8,057,323, herein incorporated by reference in their entirety.

[0039] FIGS. 1-4 illustrate a mechanism for adjusting a face angle according to certain embodiments. Shaft 109, generally having grip 105 at a distal end, presents a proximal end to be inserted through hosel 111 to couple to head 113 to form a playable club. Shaft 109 can optionally be affixed into a coupling member 139, shown in FIG. 3 having a plurality of notches. Alternatively, shaft 109 can be monolithically formed to include the notches. An exposed end of hosel 111 presents a series of complementary notches such that shaft 109 couples to head 113 in a series of discrete positions (e.g., 1, 2, 3, or more). Club 101 may include a securing mechanism (not shown), for example a retention bolt through the sole or clamp around the hosel, for securing the parts together. Other approaches to adjusting face angle, loft, or other properties are described, for example, in Davidson, et al., Adjustable

Golf Club, U.S. Pat. No. 1,879,117 and Bassin, C. Adjustable Golf Club, U.S. Pat. No. 3,096,982, incorporated by reference herein in their entirety.

[0040] Shaft **109** preferably comprises a monolithically formed primary shaft member with a proximal end and a distal end. Grip **105** can be installed on the distal end. The proximal end can be inserted into hosel **111**, either directly or through the mediating influence of coupling member **139**. Due to the manner in which a setting indicator of the invention is integrally provided with an adjustable aspect of a club, a monolithic shaft **109** can be used. Use of a monolithic (i.e., all of one piece) shaft allows a proximal end to terminate within hosel **111** and a distal end to terminate within grip **105** when club **101** is ready for play. A monolithic shaft in this disposition (e.g., not including any adjustment mechanism along the length of the shaft) optimizes the performance of a club.

[0041] Whether the notches are provided directly on shaft **109** or through a coupling member **139**, the notches define a plurality of configurations for club **101**. Each configuration can establish a different setting for an attribute of club **101**. For example, where a shaft is not perfectly rotationally symmetric around a primary shaft axis, relative offsets of a club head in different configurations can provide a club having different face angles and loft angles. As another example, a number of different shafts can be provided for insertion into hosel **111**, each providing one or more configurations to offer different attribute settings. By including window **125** in hosel **111**, indicia **135** can be provided on shaft **109** (optionally on coupling member **139**) for display through window **125**.

[0042] The systems and methods described here for adjusting an aspect of a club are only one illustrative example, and are not limiting. Other exemplary methods and systems for adjusting a club are described, for example, in Breier, J., and Golden, C., Interchangeable Shaft and Club Head Connection System, U.S. Pub. 2010/0261543, incorporated herein by reference in its entirety.

[0043] Where indicia **135** includes a number of portions, only a portion relevant to an effective setting **101** can be revealed, according to certain embodiments of the invention. As shown in FIG. 4, where the selectable attribute could be, for example, face angle, a proximal end of shaft **109** has indicia to indicate open, neutral, or closed. In the pictured setting, a portion of indicia **135** indicating neutral is displayed in window **125**, indicating a corresponding effective setting of club **101**.

[0044] FIG. 5 is a bottom view of a golf club head according to certain embodiments of the invention and illustrates that the invention provides a display indicator that can have little or no influence on an overall shape of club **101**. For example, where window **125** includes a transparent material, particularly in embodiments in which the transparent material presents an outer surface flush with an overall outer surface of club head **113**, club **101** has the same outside surface shape as an otherwise equivalent club lacking a display indicator. Accordingly, a display indicator of the invention can be incorporated into club head **113** or club **101** that has been optimized, for example, for aerodynamic properties, without interfering with those properties. Similarly, display indicators can be provided that do not detract from an overall pleasing design of a club, for instance, after designers have put significant effort into shaping parts of a club. Furthermore, a display indicator of the invention is versatile in how it is positioned. A

variety of locations, orientations, colors, and modes of display can be used according to design choices or other considerations.

[0045] The invention provides setting indicators for a variety of adjustment mechanisms for golf clubs. For example, some club heads include a mechanism which can adjust a moment of inertia, a loft angle, or another attribute by including a repositionable member that offers a club different playing characteristics when in different positions. FIG. 6 shows one exemplary repositionable member **141**. Member **141** is configured to be rotated about an axis and fixed in different relative rotation points. Member **141** has a member center of gravity that is not located on the rotational axis. Thus, when member **141** is positioned in different positions, an overall center of gravity is re-positioned within club head **113**.

[0046] In FIG. 6, repositionable member is shown located on sole **121** with a fastening component of adjustment mechanism **129**. FIG. 6 includes line A-A' defining a section of head **113**, and FIG. 7 shows a cross-sectional view of head **113** along line A-A'. As can be seen in FIG. 7, and in keeping with beneficial properties of the invention, repositioning member **141** does not change an overall morphology of club **101**. Repositionable member **141** can be in any of 2, 3, or more different positions thereby offering a golfer different effective settings for a center of gravity.

[0047] Adjustment mechanism **129** includes a setting indicator provided by a window through repositionable member **141**, as shown in FIG. 6, and indicia **135** printed on an outside surface of a shell of head **113** (optionally within a recess, as shown in FIG. 7). Thus, member **141** provides a window member configured to reveal a portion of indicia **135** corresponding to an effective value for a center of gravity. Indicia **135** can include familiar words, numbers, or pictures describing the effective center of gravity. For example, indicia **135** could display a positive or negative integer to indicate a center of gravity fore or aft of a center of gravity of a comparable club without adjustment mechanism **129**. Indicia **135** could also include descriptive terms such as "high loft", "low loft", "backspin", "distance", "COG back", "COG fore", or any other descriptive term. Indicia **135** could include a graphic icon, for instance displaying a trajectory of a ball according to an effective setting of club **101**.

[0048] Adjustment mechanism **129** can provide for the adjustment of other settings, including, for example, the way a club head sits on the ground at address. By lifting or lowering a portion of sole **121** relative to ground at address, a loft or similar attribute of club **101** can be adjusted. FIG. 8 shows an exemplary mechanism for adjusting a face angle including a setting indicator according to certain embodiments of the invention. Repositionable element **141** includes a rotatable member generally having rotational symmetry, for example in the shape of a rounded-off polygon (alternatively, repositionable element **141** could be slideable, for example, along a track or groove). Each point area of the polygon comprises material of different thickness such that as repositionable element **141** is set in different positions, an overall outer sole surface of sole **121** is varied, thereby varying the way club **101** sits on the ground at address, for example, to vary the loft.

[0049] In certain embodiments, for example, as illustrated in FIGS. 1-10, adjustment mechanism **129** includes a rotatable member. In some embodiments, a rotatable member offers an adjustable attribute of a golf club and can be rotated completely around (e.g., continuously rotatable). For example, in some embodiments, a shaft is rotatable around a

shaft axis. In certain embodiments, a club head includes a rotatable member, such as a disc or a device that preferably has rotational symmetry, configured on or in the head to be rotated, for example, to redistribute weight or to modulate how a club sits on the ground at address. Window **125** can either be in the rotatable member as shown in FIGS. **6** and **8**, such that a portion of the club head bearing indicia is viewable through the window, or the window can be in a portion of the club head as shown in FIGS. **1**, **2**, **9**, and **10**, such that the rotatable member displays indicia through the window. In some embodiments, a rotatable member provides a first position and a second position for an adjustment mechanism, wherein club **101** or club head **113** has the same shape in either position. Other exemplary rotatable members are described in Verderber, Adjustable Golf Club, U.S. Pat. No. 2,593,368; Chancellor, C., Golf Club Head with Movable Weight, U.S. Pat. No. 3,589,731; Liang, M., et al., Weight Adjusting Structure of Golf Club Head, U.S. Pub. 2009/0215551; and Roach, R., and Soracco, P., Golf Club Head with Moveable Insert, U.S. Pub. 2010/0105499 (see, e.g., FIGS. 22-24), each of which are hereby incorporated by reference in their entirety. Adjusting mechanism **129** may be provided including a rotatable element that offers a first and second position with effective rotation stops, preventing complete or continuous rotation about an axis, for example, as illustrated in Williams, et al., Adjustable Golf Club, U.S. Pat. No. 4,735,414, incorporated by reference herein in its entirety.

[0050] In certain embodiments (not pictured), adjustment mechanism **129** includes a non-rotatable member (e.g., sliding, interchangeable, repositionable, etc.). Exemplary sliding adjustment mechanisms are described, for example, in Adams, M., and Chu, S., Adjustable Weight Golf Clubs, U.S. Pub. 2008/0020861 and Morris, T., and Soracco, P., Golf Club Head with Alignment System, U.S. Pub. 2011/0190070 (see, e.g., FIG. 8), each of which are incorporated herein by reference in their entirety. Adjustment mechanism **129** can include a set of replaceable or interchangeable weight elements to be received within one or more recesses in a weighting member of a club head, and a setting indicator can be provided by window **125** disposed through the weighting member to reveal a surface of a weight element, where the surface of the weight element has upon it indicia **135**. One exemplary adjustment mechanism including replaceable or interchangeable weight elements and a weighting member is described in Mahaffey, et al., Golf Club With Peripheral Weighting, U.S. Pat. No. 6,860,818, incorporated by reference herein in its entirety.

[0051] An adjustment mechanism is illustrated in FIG. **8** including a setting indicator comprising a window through repositionable element **141** and indicia **135** on sole **121**. It will be appreciated that club **101** can be provided having adjustment mechanism **129** integrally formed therewith. However, in certain embodiments, adjustment mechanism **129** can be provided to be coupled to club head **113**. For example, repositionable member **141** can be offered as a kit with an attachment member such as a screw or adhesive mount, and a sticker to provide indicia **135**. In certain embodiments, club **101** has a recess in sole **121** (e.g., as shown in FIG. **8** as a partial recess) generally shaped to receive repositionable member as well as indicia **135** optionally printed therein. Repositionable member can be provided separately—for example, as a replacement for an original or

an interchangeable part. Thus the invention provides a setting display device that can be provided to be coupled to a golf club.

[0052] In some embodiments, the invention provides a golf club with a setting indicator operable with an adjustment mechanism to provide different configurations while revealing indicia corresponding to those indicia through a window or aperture. For example, mechanisms for adjusting a center of gravity of a club head can operate with a setting indicator of the invention. FIG. **9** is a cross-sectional view of a golf club head including a mechanism for providing different centers of gravity within a club head. As can be seen in FIG. **9**, repositionable element **141** is generally positioned between crown **117** and sole **121** of club head **113**. Repositionable element **141** can have an uneven weight distribution, thus having a center of gravity of that element not located on a central axis. This way, when the element is rotated, the center of gravity of club **101** changes. Adjustment mechanism **129** is preferably mostly contained within head **113**. Head **113** further includes window **125** for revealing indicia on repositionable element **141**, for example, as shown in FIG. **10**.

[0053] As illustrated, for example, in FIGS. **9** and **10**, an advantage of setting indicators of the invention lies in their ability to be integrated smoothly into a golf club having an overall standard shape and appearance. Accordingly, the invention provides setting indicators for adjustable clubs having minimal or no protrusions past the outside of a standard club surface. Exemplary adjustment mechanisms, for example, as illustrated in FIGS. **9** and **10**, as well as a variety of other adjustment mechanisms suitable for inclusion with a setting indicator according to the invention, are disclosed in detail in Roach, R., et al., Golf Club Head with Moveable Insert, U.S. Pub. 2010/0105499, incorporated by reference herein in its entirety.

[0054] The invention provides setting indicators optionally including augmented functionality. For example, in some embodiments, window **125** includes a transparent material with a lens, for example, to magnify indicia **135**. Indicia **135** can optionally be illuminated, for example, by including one or more LEDs or other illumination elements within or around window **125**, or by the use of phospholuminescent or glow-in-the-dark pigment.

[0055] In some embodiments, club **101** includes two or more of window **125**, for instance, where club **101** has two or more adjustable attributes. As an example, club **101** may be provided with a mechanism for adjusting loft, as illustrated generally in FIGS. **1-5** (illustrating generally mechanisms for adjusting face angle, loft, shaft length, shaft choice, shaft/head positioning, etc.). As a golfer sets a desired loft, the golfer may discover a related, unintended change in face angle. A variable lifter element as illustrated, for example, in FIG. **8**, may also be included in club **101**, allowing the golfer to adjust the unintended change in face angle. Accordingly, the invention provides for a club head having two of window **125**, to allow the golfer to see information about an effective setting of loft and face angle.

[0056] Indicia **135** can be provided to supply information in the form of text, numbers, icons, pictures, colors, engravings, illuminated markings, codes, or any combination thereof. Indicia can be embossed, debossed, provided by a hologram or photochromic material, or any combination of the foregoing. For example, indicia **135** may include color codes, that have corresponding meaning across more than one golf club or more than one setting indicator of the invention. In some

embodiments, a setting indicator is provided with a blank area for indicia **135** and a kit including one or more stickers bearing different indicia **135**, so that a golfer may choose if they prefer words, numbers, or colors, for example.

[0057] In certain embodiments, a setting indicator of the invention comes in a kit with a specialized tool for manipulating an effective setting. As an illustrative example, FIGS. **6** and **7** show repositionable member **129** generally being a rotatable member and having adjustment mechanism **129** at the center, with a recess to receive an end of a specialty tool. A specialty tool can be provided with an adjustment mechanism. In some embodiments, a graphic key (e.g., a table) is printed on the specialty tool, showing different portions of indicia **135** and giving more information about the effective setting they indicate. In some embodiments, the graphic key is supplied on a card or otherwise printed on a tool or accessory. In some embodiments, information about effective settings or the corresponding indicia is provided electronically, for example, on a web page, or a downloadable app for a smartphone.

[0058] In some embodiments, window **125** is an electronic display, such as an LCD or LED readout. A small battery or chip may be included within club **101**, for example, to detect an effective setting of adjustment mechanism **129** and reveal indicia **135** electronically.

[0059] In certain embodiments club **101** can have features to lower a weight, for example, overall, or to compensate for weight added by inclusion of components according to certain embodiments of the invention. One exemplary method for minimizing weight in a club is the use of lightweight inserts. Weight-saving inserts are described, for example, in Soracco, P., Golf Club With Concave Insert, U.S. Pub. 2011/0275455, incorporated herein by reference in its entirety.

[0060] In some embodiments, a golf club or component of the indicia has a surface with a photochromic or directional-based graphic.

[0061] The term “photochromic” generally refers to a reversible change of color under exposure to light, for example by a chromene or a silver halide salt. In some embodiments, golf club **101** can comprise one component that includes a photochromic portion, and another component that does not. For example, in some embodiments, indicia **135** darkens when exposed to light, thereby ensuring that when the club head is at address or in play, no distracting logos or similar visual elements are visible. In some embodiments, window **125** is transparent when exposed to direct sunlight and substantially opaque when exposed to diminished light (e.g., indirect sunlight, filtered sunlight, indoor light, evening light, low light). Thus, a setting indicator of the invention may present a utilitarian aspect while the club is in play on a golf course, and present an aesthetically pleasing aspect while the club is displayed in a store.

[0062] In some embodiments, a portion of a golf club includes a photochromic material in a configuration that causes a sight line or alignment aid which reversibly appears, for example, when the club is exposed to sunlight at address. In certain embodiments, a portion of a golf club includes a photochromic indicia or element on a surface of any component, for example, including without limitation, a head, shaft, hosel, sleeve, or iron topline.

[0063] Indicia **135** or another surface of club **101** may include a directional-based graphic. For example, indicia **135** as shown in FIG. **10** may include a plurality of lenticular lenses oriented so that indicia **135** is visible to a golfer holding

club **101** at address (e.g., from a direction substantially normal to a surface of window **125**), but not visible to a person standing away nearby (e.g., with a line of sight defining an angle less than about **80** degrees with a surface of window **125**). Exemplary directional-based graphics for golf clubs are described in Roach, R., and Soracco, P., Golf Club With Directional Based Graphic, U.S. Pub. 2011/0059808, incorporated by reference herein in its entirety.

[0064] In part due to the fact that adjustment mechanism **129** and a setting indicator each provide a very good training aid for a learning golfer, a setting indicator according to the invention may generally complement features that also provide training aids. For example, a monochrome golf club is known to be a training aid because, by not having any graphics or multi-colored portions, a learning golfer can best see and understand a smooth visual trace of their swing, thereby improving their swing. Also, because visual acuity is diminished in the peripheral regions, a monochrome golf club is easier to see at the extremes of a swing, making it a good tool for a golfer working on improving their swing. A golfer may also desire to experiment with different settings according to an adjustment mechanism. Thus, in certain embodiments, a setting indicator of the invention is supplied with a single-color golf club.

[0065] As can be seen from the foregoing, the invention provides a setting indicator for a golf club or a golf club having a setting indicator. The setting indicator includes a window and an adjustment mechanism configured to provide a golf club with a selected attribute while also displaying an indicia through the window to provide information about the selected attribute.

[0066] Any documents referenced in this disclosure are hereby incorporated herein by reference in their entirety for all purposes.

[0067] Various modifications of the invention and many further embodiments thereof, in addition to those shown and described herein, will become apparent to those skilled in the art from the full contents of this document, including references to the scientific and patent literature cited herein. The subject matter herein contains important information, exemplification and guidance that can be adapted to the practice of this invention in its various embodiments and equivalents thereof.

What is claimed is:

1. A golf club component comprising a setting display device, the setting display device comprising:
 - an aperture through a surface of the component;
 - an adjustment mechanism configured to provide a golf club with a selected attribute setting thereby displaying an indicia through the aperture to provide information about the selected attribute.
2. The component of claim **1** further wherein the component is a club head and the aperture is in a hosel area of the club head configured to receive a removable shaft comprising a grip at a distal portion and the indicia at a proximal portion.
3. The component of claim **2**, wherein the shaft can be coupled to the head in a plurality of positions.
4. The component of claim **3**, wherein the indicia comprises marking such that coupling the shaft to the head in one of the positions reveals a portion of the marking through the aperture, the revealed portion giving information about the selected attribute specific to that position.
5. The component of claim **1**, further wherein the aperture comprises a transparent material.

6. The component of claim 5 wherein the transparent material is one selected from the list consisting of glass, plastic, polymer and crystal.

7. The component of claim 5 wherein the transparent material is coupled to the component by one selected from the list consisting of cement, adhesive, laser welding, heat stake, snap-fit, press-fit, co-molding, a gasket, and threading.

8. The component of claim 1, further comprising a rotatable member and further wherein adjustment of the attribute setting does not substantially change an external shape of the golf club.

9. A setting display device for a golf club comprising a window member comprising a window and configured to be positioned relative to an indicator member thereby providing the golf club with a selected configuration and revealing indicia on the indicator member, wherein the revealed indicia provides information about the selected configuration.

10. The device of claim 9 wherein the window member is in a hosel.

11. The device of claim 10 wherein the hosel is further configured to couple to a golf club shaft, and wherein the indicator member comprises an end portion of the shaft configured to be received within the hosel.

12. The device of claim 11, wherein the two or more selectable configurations provide a golf club having two or more different face angles, and the revealed indicia provides information about the face angle.

13. The device of claim 11, wherein the two or more selectable configurations provide a golf club having two or more different loft settings, and the revealed indicia provides information about the loft setting.

14. The device of claim 9, further wherein the window member is configured to be repositionably mounted on a golf club head such that the club head has a first center of gravity with the window member mounted in a first position and a second center of gravity with the window member mounted in a second position.

15. The device of claim 9, wherein the window member comprises a portion of a surface of a golf club head and further wherein the indicator member is configured to be repositionably mounted within the golf club head such that the club head has a first center of gravity with the indicator member mounted in a first position and a second center of gravity with the indicator member mounted in a second position.

16. A golf club with a setting indicator, the golf club comprising a shaft and a head and further comprising:

- an opening through a portion of the head; and
- an adjustment mechanism, wherein the adjustment mechanism provides a first configuration while revealing a first indicia through the opening and provides a second configuration while revealing a second indicia through the opening.

17. The golf club of claim 16, wherein the adjustment mechanism comprises a repositionable member capable of being repositioned from the first configuration to the second configuration.

18. The golf club of claim 17, further wherein the repositionable member is rotatable about an axis, and the repositionable member has a member center of gravity spaced away from the axis such that the first configuration provides a first club head center of gravity and the second position provides a second club head center of gravity.

19. The golf club of claim 17, wherein the repositionable member is positioned between a sole of a club head and a crown of a club head.

20. The golf club of claim 16 wherein the head comprises a repositionable element mounted on a shell surface of a shell member of a club head, and the repositionable element comprises the opening and the first and second indicia are on the shell surface.

21. The golf club of claim 16, wherein the first configuration and the second configuration provide different values for a factor, and further wherein the factor is one selected from the list consisting of: loft; face angle; moment of inertia; center of gravity; bounce angle; club length; and weight.

22. The golf club of claim 16, further wherein the adjustment mechanism:

- reveals only the first indicia while providing the first configuration;
- reveals the first indicia only while providing the first configuration;
- reveals only the second indicia while providing the second configuration; and
- reveals the second indicia only while providing the second configuration.

23. A golf club comprising a head and a shaft and further comprising an adjustable attribute, the head comprising a window member configured to reveal a first indicia of an adjustment mechanism when the mechanism is in a first position to establish a first value for the attribute and reveal a second indicia of the mechanism when the mechanism is in a second position to establish a second value for the attribute.

24. The golf club of claim 23, wherein the window member is further configured to reveal a third indicia of the adjustment mechanism when the mechanism is in a third position to establish a third value for the attribute.

25. The golf club of claim 24, wherein the attribute is face angle, the first value is open, the second value is neutral, and third value is closed.

26. The golf club of claim 23, wherein the indicia comprise markings on a surface.

27. The golf club of claim 26, wherein the window is in a hosel of the head and the adjustment mechanism comprises a portion of the shaft, and further wherein the hosel is configured to receive the portion of the shaft and further wherein the first and second indicia are on a surface of the portion of the shaft.

28. The golf club of claim 23 wherein the adjustable attribute comprises a center of gravity of a club head and the adjustment mechanism comprises a weight member repositionably coupled to the club head.

29. The golf club of claim 23, wherein the adjustment mechanism comprises a rotatable member.

30. The golf club of claim 24, wherein the window member is further configured to reveal a fourth indicia of the adjustment mechanism when the mechanism is in a fourth position to establish a fourth value for the attribute.

31. The golf club of claim 31, wherein the window member is further configured to reveal a fifth indicia of the adjustment mechanism when the mechanism is in a fifth position to establish a fifth value for the attribute.