HOSEL INSERT FOR A GOLF CLUB HEAD

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ABSTRACT
Various embodiments of a golf club head comprising a body having a strike face, a heel portion, and a toe portion, a hosel having a body with a first end, extending from the heel portion of the body of the club head, and a second end, configured to receive a shaft, a cavity configured adjacent to the body of the hosel, and an insert configured to be secured within the cavity are described herein.
<table>
<thead>
<tr>
<th>CLUB HEAD</th>
<th>LIE ANGLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 - IRON</td>
<td>59.0</td>
</tr>
<tr>
<td>5 - IRON</td>
<td>60.0</td>
</tr>
<tr>
<td>6 - IRON</td>
<td>60.9</td>
</tr>
<tr>
<td>7 - IRON</td>
<td>61.9</td>
</tr>
<tr>
<td>8 - IRON</td>
<td>62.8</td>
</tr>
<tr>
<td>9 - IRON</td>
<td>63.8</td>
</tr>
</tbody>
</table>

**FIG. 6**

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>CUSTOM LIE ANGLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAROON</td>
<td>4.5° (UPRIGHT)</td>
</tr>
<tr>
<td>SILVER</td>
<td>3.75° (UPRIGHT)</td>
</tr>
<tr>
<td>WHITE</td>
<td>3° (UPRIGHT)</td>
</tr>
<tr>
<td>GREEN</td>
<td>2.25° (UPRIGHT)</td>
</tr>
<tr>
<td>YELLOW</td>
<td>1.5° (UPRIGHT)</td>
</tr>
<tr>
<td>BLUE</td>
<td>0.75° (UPRIGHT)</td>
</tr>
<tr>
<td>BLACK</td>
<td>0°</td>
</tr>
<tr>
<td>RED</td>
<td>0.75° (FLAT)</td>
</tr>
<tr>
<td>PURPLE</td>
<td>1.5° (FLAT)</td>
</tr>
<tr>
<td>ORANGE</td>
<td>2.25° (FLAT)</td>
</tr>
<tr>
<td>BROWN</td>
<td>3° (FLAT)</td>
</tr>
<tr>
<td>GOLD</td>
<td>3.75° (FLAT)</td>
</tr>
</tbody>
</table>

**FIG. 7**
PROVIDING A SET OF GOLF CLUBS 100 HAVING HEADS 4 WITH CAVITIES

PROVIDING A PLURALITY OF INSERTS 48 HAVING INDICATORS 108, WHEREIN EACH INDICATOR 108 RELATES TO A PARTICULAR LIE ANGLE 72

BENDING THE HOSEL 28 AND THE SHAFT 40 OF EACH OF THE GOLF CLUBS TO A DESIRED LIE ANGLE 72

POSITIONING, THE INSERT 48 HAVING THE INDICATOR 108 FOR THE DESIRED LIE ANGLE 72, WITHIN THE CAVITY 44

FIG. 8
HOSEL INSERT FOR A GOLF CLUB HEAD

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This claims priority to U.S. Provisional Patent Application No. 62/141,125, filed on Mar. 31, 2015, which is incorporated by reference herein in its entirety.

FIELD OF INVENTION

[0002] The present disclosure relates to golf clubs. In particular, the present disclosure relates to iron-type golf club heads, wedge-type golf club heads, and hybrid-type golf club heads.

BACKGROUND

[0003] Many golf club heads include cavities positioned in the hosel to direct stress to the location of the cavity during bending to achieve a desired lie angle. When the stress is directed to the cavity during bending, the stress is relieved from the rest of the club head, thereby maintaining the performance characteristics of the club head body. The desired lie angle may be different for different golfers. Identifying the lie angles of particular golf club heads is beneficial to golfers and golf club manufacturers.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] FIG. 1 illustrates a golf club head with a cavity.
[0005] FIG. 2 illustrates a side view of the golf club head in FIG. 1.
[0006] FIG. 3 illustrates another view of the golf club head in FIG. 1.
[0007] FIG. 4 illustrates a perspective view of the golf club head in FIG. 1.
[0008] FIG. 5 illustrates the golf club head of FIG. 1 having an insert with an indicator positioned within the cavity.
[0009] FIG. 6 illustrates a set of golf clubs having varying lie angles.
[0010] FIG. 7 illustrates the variations of the indicator of the insert in FIG. 5.
[0012] Other aspects of the disclosure will become apparent by consideration of the detailed description and accompanying drawings.

[0013] For simplicity and clarity of illustration, the drawing figures illustrate the general manner of construction, and descriptions and details of well-known features and techniques may be omitted to avoid unnecessarily obscuring the present disclosure. Additionally, elements in the drawing figures are not necessarily drawn to scale. For example, the dimensions of some of the elements in the figures may be exaggerated relative to other elements to help improve understanding of embodiments of the present disclosure. The same reference numerals in different figures denote the same elements.

DETAILED DESCRIPTION

[0014] The inventors have discovered an insert, able to be positioned within the cavity of a golf club hosel, to create a more uniform appearance of golf club heads. The insert may also indicate the lie angle of each golf club determined during custom fitting of a golfer.

[0015] The terms “first,” “second,” “third,” “fourth,” and the like in the description and in the claims, if any, are used for distinguishing between similar elements and not necessarily for describing a particular sequential or chronological order. It is to be understood that the terms so used are interchangeable under appropriate circumstances such that the embodiments described herein are, for example, capable of operation in sequences other than those illustrated or otherwise described herein. Furthermore, the terms “include,” and “have,” and any variations thereof, are intended to cover a non-exclusive inclusion, such that a process, method, system, article, device, or apparatus that comprises a list of elements is not necessarily limited to those elements, but may include other elements not expressly listed or inherent to such process, method, system, article, device, or apparatus.

[0016] The terms “left,” “right,” “front,” “back,” “top,” “bottom,” “over,” “under,” and the like in the description and in the claims, if any, are used for descriptive purposes and not necessarily for describing permanent relative positions. It is to be understood that the terms so used are interchangeable under appropriate circumstances such that the embodiments of the apparatus, methods, and/or articles of manufacture described herein are, for example, capable of operation in other orientations than those illustrated or otherwise described herein.

[0017] Before any embodiments of the disclosure are explained in detail, it is to be understood that the disclosure is not limited in its application to the details of construction and the arrangement of components set forth in the following description or illustrated in the following drawings. The disclosure is capable of other embodiments and of being practiced or of being carried out in various ways.

[0018] FIGS. 1-5 illustrate a golf club head 4 including a body 8 with a heel portion 12, a toe portion 16, a strike face 20, and a sole 24. The club head 4 further includes a hosel 28 having a body 30 with a first end 32 extending from the heel portion 12 of the body 8, a second end 36 configured to receive a shaft 40, and a cavity 44 configured to receive an insert 48. The cavity includes two or more protrusions 50 on a perimeter thereof. The hosel defines a longitudinal axis X extending through the center of the hosel 28 from the first end 32 to the second end 36. The strike face 20 of the body 8 defines a loft plane 60 of the club head 4. The sole 24 of the body 8 defines a sole plane 64 of the club head 4, tangent to the center point of the sole 24. The club head 4 further includes a loft angle 68, defined as the angle between the loft plane 60 and the longitudinal axis X, and a lie angle 72, defined as the angle between the sole plane 64 and the longitudinal axis X.

[0019] Referring to FIG. 4, the cavity 44 is positioned adjacent to the first end 32 of the hosel 28 and is directed toward the sole 24 of the club head 4. The cavity 44 is further positioned on the hosel 28 such that the cavity 44 is visible from a front view and a sole view of the club head 4. In the illustrated embodiment, the cavity is substantially elliptical in shape and has a length 76, a width 80, and a volume (not shown). The length 76 extends through the center of the cavity along an axis A perpendicular to the strike face 20 and substantially bisecting the cavity 44. The width 80 extends through the center of the cavity along an axis B parallel to the strike face 20 and substantially bisecting the cavity 44.
The volume of the cavity 44 is defined as the volume of material removed from the body 30 of the hosel 28 of the club head 4 to create the cavity 44. In other embodiments, the cavity may be circular, square, rectangular, triangular, trapezoidal, or any other shape capable of directing stress to the cavity and away from the rest of the club head 4.

[0020] The cavity 44, illustrated in FIG. 4, is positioned in the hosel 28 to allow bending of the club head 4 to the appropriate lie angle. The cavity 44 directs stress to the location of the cavity during bending and relieves stress from the rest of the club head 4, thereby maintaining the performance characteristics of the body 8 of the club head 4. The greater the volume of the cavity, the more stress is directed away from the rest of the club head 4, thereby better preserving the performance characteristics of the body 8 of the club head 4. However, increasing the volume of the cavity may detract from the uniform appearance of the golf club head 4.

[0021] The insert 48, illustrated in FIG. 5, is configured to be positioned or secured within the cavity 44 to maintain a uniform appearance of the golf club head 4 and the first end 32 of the hosel 28. The insert 48 is sized and shaped to be matingly received within the cavity 44. For example, the insert 48 may be circular, square, rectangular, elliptical, ovular, triangular, trapezoidal, or any other shape or combination of shapes. The insert 48 may be positioned within the cavity such that the insert 48 is flush with an outer surface of the hosel 28 to achieve a uniform appearance. The insert 48 may also be positioned within the cavity such that the insert 48 is recessed or protruding relative to the outer surface of the hosel 28.

[0022] The insert 48 may comprise a flexible material and include two or more grooves 96 in the insert 48 that are configured to align with the protrusions 50 of the cavity 44. The insert 48 may be secured within the cavity 44 using a press fit mechanism. The grooves 96 of the insert 48 may be aligned with the protrusions 92 of the cavity 44, and the insert 48 pressed into the cavity 44 to achieve a press fit. The flexibility of the insert 48 allows the insert 48 to compress upon positioning within the cavity 44. When the insert 48 is released, after being positioned in the cavity 44, the insert 48 expands resulting in a press fit. The press fit allows the insert 48 to remain positioned within the cavity 44 after insertion.

[0023] In other embodiments, the insert 48 may be made of any flexible or rigid material (e.g. polyurethane, polyethylene, other plastics, stainless steel, titanium, tungsten, other metal, composites, metal alloys, or any other material). Further, the insert 48 may be secured within the cavity using mechanisms other than a press fit mechanism, such as an adhesive backing, a screw, or a mechanical fastener.

[0024] Referring to FIG. 6, golf clubs are typically sold in sets, each set including golf clubs with heads 4 having varying loft angles 68. For example, a set of golf clubs 100 may include a 4-iron, a 5-iron, a 6-iron, a 7-iron, an 8-iron, and a 9-iron, wherein the loft angle 68 of the 9-iron is greater than the loft angle 68 of the 8-iron, the loft angle 68 of the 8-iron is greater than the loft angle 68 of the 7-iron, the loft angle 68 of the 7-iron is greater than the loft angle 68 of the 6-iron, the loft angle 68 of the 6-iron is greater than the loft angle 68 of the 5-iron, and the loft angle 68 of the 5-iron is greater than the loft angle 68 of the 4-iron. This example includes a set of iron-type golf clubs with six golf clubs. However, the set of golf clubs 100 may include more than six or fewer than six golf clubs (e.g. the set of golf clubs 100 may further include a 2-iron and a 3-iron). Further, this example relates specifically to iron-type golf club heads 4, but may apply to wedge-type and hybrid-type golf club heads 4 in addition to iron-type golf club heads 4, or may apply to any combination of iron-type golf club heads, wedge-type golf club heads, and hybrid-type golf club heads.

[0025] Further referring to FIG. 6, the cavity of each golf club head 4 within the set of golf clubs 100 increases in size as the loft angles 68 of the club heads 4 increase. For example, the length 76 of the cavities of the club heads 4 increases as the loft angles 68 of the club heads 4 within the set of golf clubs 100 increase. Specifically, the length 76 of the cavity of the 9-iron is greater than the length 76 of the cavity of the 8-iron, the length 76 of the cavity of the 8-iron is greater than the length 76 of the cavity of the 7-iron, the length 76 of the cavity of the 7-iron is greater than the length 76 of the cavity of the 6-iron, the length 76 of the cavity of the 6-iron is greater than the length 76 of the cavity of the 5-iron, and the length 76 of the cavity of the 5-iron is greater than the length 76 of the cavity of the 4-iron.

[0026] Further referring to FIG. 6, the width 80 of the cavities of the club heads 4 increases as the loft angles 68 of the club heads 4 within the set of golf clubs 100 increase. Specifically, the width 80 of the cavity of the 9-iron is greater than the width 80 of the cavity of the 8-iron, the width 80 of the cavity of the 8-iron is greater than the width 80 of the cavity of the 7-iron, the width 80 of the cavity of the 7-iron is greater than the width 80 of the cavity of the 6-iron, the width 80 of the cavity of the 6-iron is greater than the width 80 of the cavity of the 5-iron, and the width 80 of the cavity of the 5-iron is greater than the width 80 of the cavity of the 4-iron.

[0027] Further referring to FIG. 6, the volume of the cavities of the club heads 4 increases as the loft angles 68 of the club heads 4 within the set of golf clubs 100 increase. Specifically, the volume of the cavity of the 9-iron is greater than the volume of the cavity of the 8-iron, the volume of the cavity of the 8-iron is greater than the volume of the cavity of the 7-iron, the volume of the cavity of the 7-iron is greater than the volume of the cavity of the 6-iron, the volume of the cavity of the 6-iron is greater than the volume of the cavity of the 5-iron, and the volume of the cavity of the 5-iron is greater than the volume of the cavity of the 4-iron. The volume of the cavities may range from 0.1 cm³ to 0.8 cm³.

[0028] Specifically, with reference to FIG. 6, the length 76 of the cavity 44 may range from approximately 0.45 inches to approximately 0.75 inches, or from approximately 0.55 inches to approximately 0.65 inches. For example, the length 76 of the cavity 44 can be approximately 0.45 inches, approximately 0.50 inches, approximately 0.55 inches, approximately 0.60 inches, approximately 0.65 inches, approximately 0.70 inches, or approximately 0.75 inches. Further, the width 80 of the cavity 44 may range from approximately 0.25 inches to approximately 0.40 inches, or from approximately 0.30 inches to approximately 0.35 inches. For example, the width 80 of the cavity 44 can be approximately 0.25 inches, approximately 0.30 inches, approximately 0.35 inches, or approximately 0.40 inches.

[0029] In many embodiments, the length 76, the width 80, and the volume of the cavity of each club head 4 within the set of golf clubs 100 increases as the loft angle 68 of the respective club head 4 increases. In some embodiments, the length 76 of the cavity of each club head 4 within the set of
golf clubs 100 may remain constant or decrease as the loft angle 68 of the respective club head 4 increases, the width 80 of the cavity of each club head 4 within the set of golf clubs 100 may remain constant or decrease as the loft angle 68 of the respective club head 4 increases, and the width 80 of the cavity of each club head 4 within the set of golf clubs 100 may remain constant or decrease as the loft angle 68 of the respective club head 4 increases.

[0030] In many embodiments, the length 76, the width 80, and the volume of the cavity of each golf club head 4 within the set of golf clubs 100 increases as the loft angle 68 increases. Further, the insert 48 increases in size to accommodate the increase in size of the cavity. For example, the insert 48 for the cavity of the 9-iron is larger than the insert 48 for the cavity of the 8-iron, the insert 48 for the cavity of the 8-iron is larger than the insert 48 for the cavity of the 7-iron, the insert 48 for the cavity of the 7-iron is larger than the insert 48 for the cavity of the 6-iron, the insert 48 for the cavity of the 6-iron is larger than the insert 48 for the cavity of the 5-iron, and the insert 48 for the cavity of the 5-iron is larger than the insert 48 for the cavity of the 4-iron.

[0031] Referring to FIG. 6, the lie angles 72 of the club heads 4 within the set of golf clubs 100 vary as the loft angles 68 of the club heads 4 within the set of golf clubs 100 vary. Specifically, the lie angle 72 increases as the loft angle 68 increases for the golf club heads 4 in each set of golf clubs 100. Therefore, the lie angle 72 of the 9-iron is greater than the lie angle 72 of the 8-iron, the lie angle 72 of the 8-iron is greater than the lie angle 72 of the 7-iron, the lie angle 72 of the 7-iron is greater than the lie angle 72 of the 6-iron, the lie angle 72 of the 6-iron is greater than the lie angle 72 of the 5-iron, and the lie angle 72 of the 5-iron is greater than the lie angle 72 of the 4-iron.

[0032] For example, with reference to FIG. 6, the lie angle 72 of the 4-iron club head 4 may range from 57-61 degrees, the lie angle 72 of the 5-iron club head 4 may range from 56-63 degrees, the lie angle 72 of the 6-iron club head 4 may range from 57-64 degrees, the lie angle 72 of the 7-iron club head 4 may range from 58-65 degrees, the lie angle 72 of the 8-iron club head 4 may range from 59-64 degrees, and the lie angle 72 of the 9-iron club head 4 may range from 60-67 degrees. In the illustrated embodiment, the lie angle 72 of the 4-iron club head 4 is approximately 59.0 degrees, the lie angle 72 of the 5-iron club head 4 is approximately 60.0 degrees, the lie angle 72 of the 6-iron club head 4 is approximately 60.9 degrees, the lie angle 72 of the 7-iron club head 4 is approximately 61.9 degrees, the lie angle 72 of the 8-iron club head 4 is approximately 62.8 degrees, and the lie angle 72 of the 9-iron club head 4 is approximately 63.8 degrees.

[0033] The lie angle 72 of each golf club head 4 within the set of golf clubs 100 may be altered from the lie angle 72 that comes standard for each of the golf club heads 4 within the set of golf clubs 100 to achieve a custom lie angle 104. Hereafter, the lie angle 72 that comes standard for each of the club heads 4 within the set of golf clubs 100 is referred to as the standard lie angle 72. For example, if a particular golfer does not receive a custom fitting, the particular golfer may purchase the set of golf clubs 100 having the standard lie angles 72. If the particular golfer receives a custom fitting, the particular golfer may purchase the set of golf clubs 100 having the custom lie angles 104, wherein the custom lie angles 104 are determined during custom fitting for each individual golfer.

[0034] Referring to FIG. 7, the custom lie angle 104 of each of the golf clubs within the set of golf clubs 100, determined during custom fitting, is defined herein relative to the standard lie angle 72. For example, the custom lie angle 104 of the 9-iron may be upright relative to the standard lie angle 72 of the 9-iron within the set of golf clubs 100. In other words, when the custom lie angle 104 of the 9-iron is upright relative to the standard lie angle 72, the custom lie angle 104 is greater than the standard lie angle 72. Further, the custom lie angle 104 may be flat compared to the standard lie angle 72 for the golf clubs within the set of golf clubs 100. In other words, when the custom lie angle 104 of the 9-iron is flat relative to the standard lie angle 72, the custom lie angle 104 is less than the standard lie angle 72. The custom lie angles 104 may be the same for each golf club head 4 within the set of golf clubs 100, or the custom lie angles 104 may be different for each golf club head 4 within the set of golf clubs 100. Further, the standard lie angles 72 may be determined to be the best fit for a particular golfer based on custom fitting.

[0035] Further referring to FIG. 7, the custom lie angles 104 of the club heads 4 within the set of golf clubs 100 may range from 0-2 degrees upright, 0-5 degrees upright, 0-10 degrees upright or any other range of upright custom lie angles 104. The custom lie angles 104 may also range from 0-2 degrees flat, 0-5 degrees flat, 0-10 degrees flat, or any other range of flat custom lie angles 104. The increments in custom lie angles 104 may be 0.25 degrees, 0.5 degrees, 0.75 degrees, 1.0 degrees, 1.25 degrees, 1.5 degrees, 1.75 degrees, 2.0 degrees, 2.25 degrees, 2.5 degrees, 2.75 degrees, 3 degrees, or any other degree increment for both upright and flat custom lie angles 104. Further, the increments in custom lie angles 104 may be the same or may differ for both upright and flat custom lie angles 104. In the illustrated embodiment, the custom lie angles 104 include: 0.75 degrees upright, 1.5 degrees upright, 2.25 degrees upright, 3 degrees upright, 3.75 degrees upright, 4.5 degrees upright, 0.75 degrees flat, 1.5 degrees flat, 2.25 degrees flat, 3 degrees flat, and 3.75 degrees flat.

[0036] Referring to FIG. 5, the inserts 48 indicate the lie angle 72 of each golf club head 4 within the set of golf clubs 100 by use of an indicator 108. In the illustrated embodiment, the lie angle 72 of each club head 4 is indicated using a color indicator 108. For example, the color indicator 108 for the standard lie angle 72 is black and the color indicators 108 for the custom lie angles 104 are as follows: blue indicates the upright lie angle 72 of 0.75 degrees, yellow indicates the upright lie angle 72 of 1.5 degrees, green indicates the upright lie angle 72 of 2.25 degrees, white indicates the upright lie angle 72 of 3 degrees, silver indicates the upright lie angle 72 of 3.75 degrees, maroon indicates the upright lie angle 72 of 4.5 degrees, red indicates the flat lie angle 72 of 0.75 degrees, purple indicates the flat lie angle 72 of 1.5 degrees, orange indicates the flat lie angle 72 of 2.25 degrees, brown indicates the flat lie angle 72 of 3 degrees, and gold indicates the flat lie angle 72 of 3.75 degrees.

[0037] In some embodiments, different color coding systems may be used to indicate the lie angles 72 of golf club heads 4 within a set of golf clubs 100. For example, colors other than the colors listed above may be used to indicate the lie angles 72, or the colors listed above may be used in different sequences to indicate the lie angles 72. Further, the inserts 48 may indicate the lie angles 72 using indicators 108 other than colors. For example, the lie angles 72 may be explicitly depicted on the insert 48, letter designations may
be used to indicate the lie angles 72, number designations may be used to indicate the lie angles 72, or any other methods may be used to indicate the lie angles 72 on the inserts 48. As illustrated in FIG. 5, the inserts 48 in the described embodiment function to fill and/or substantially cover the cavities and indicate the lie angles 72 of the golf club heads 4 within the set of golf clubs 100. The inserts 48 may also be weighted to enhance performance characteristics of the golf clubs. For example, each of the inserts 48 may be configured to receive a weight member (not shown). The weight member may be made of tungsten, stainless steel, titanium, other metals, composites, metal alloys, polyurethane, polyurethane reinforced with other materials, or any other material. The weight member may be permanently coupled to the insert 48 or the weight member may be removably coupled to the weight member using a screw, a press fit mechanism, or any other mechanism. Further, each of the inserts 48 may be made of materials having different compositions, different weights, different volumes, different densities, or any combination of the described material variations.

The inserts 48 may also include an electronic positioning system (not shown) to provide further information to the golfer. For example, the information on the insert 48 of a particular golf club may include: yarndge to the front of the green, yardage to the back of the green, yardage to the middle of the green, range that the golfer can hit the ball using the particular golf club, or electronic information useful for the golfer. Yarndge to the front, middle, and back of a green would align with a particular hole and course for each round.

A method of manufacturing the sets of golf clubs having golf club heads 4 with inserts 48 positioned in the cavities of the hosels 28 is illustrated in FIG. 8. The method includes: providing a set of golf clubs 100 having heads 4 with cavities; providing a plurality of inserts 48 having indicators 108, wherein each indicator 108 relates to a particular lie angle 72; bending the hosel 28 and the shaft 40 of each of the golf clubs to a desired lie angle 72; and positioning the insert 48 having the indicator 108 for the desired lie angle 72 within the cavity 44 of the golf club.

Replacement of one or more claimed elements constitutes reconstruction and not repair. Additionally, benefits, other advantages, and solutions to problems have been described with regard to specific embodiments. The benefits, advantages, solutions to problems, and any element or elements that may cause any benefit, advantage, or solution to occur or become more pronounced, however, are not to be construed as critical, required, or essential features or elements of any or all of the claims.

As the rules to golf may change from time to time (e.g., new regulations may be adopted or old rules may be eliminated or modified by golf standard organizations and/or governing bodies such as the United States Golf Association (USGA), the Royal and Ancient Golf Club of St. Andrews (R&A), etc.), golf equipment related to the apparatus, methods, and articles of manufacture described herein may be conforming or non-conforming to the rules of golf at any particular time. Accordingly, golf equipment related to the apparatus, methods, and articles of manufacture described herein may be advertised, offered for sale, and/or sold as conforming or non-conforming golf equipment. The apparatus, methods, and articles of manufacture described herein are not limited in this regard.

While the above examples may be described in connection with a driver-type golf club, the apparatus, methods, and articles of manufacture described herein may be applicable to other types of golf club such as a fairway wood-type golf club, a hybrid-type golf club, an iron-type golf club, a wedge-type golf club, or a putter-type golf club. Alternatively, the apparatus, methods, and articles of manufacture described herein may be applicable to other type of sports equipment such as a hockey stick, a tennis racket, a fishing pole, a ski pole, etc.

Moreover, embodiments and limitations disclosed herein are not dedicated to the public under the doctrine of dedication if the embodiments and/or limitations: (1) are not expressly claimed in the claims; and (2) are or are potentially equivalents of express elements and/or limitations in the claims under the doctrine of equivalents.

Various features and advantages of the disclosure are set forth in the following claims.

1. A golf club head comprising: a body having a strike face, a heel portion, and a toe portion; a hosel having a body with a first end, extending from the heel portion of the body of the club head, and a second end, configured to receive a shaft; a cavity positioned adjacent to the body of the hosel; and an insert configured to be secured within the cavity.

2. The golf club of claim 1, wherein the cavity is located adjacent to the first end of the hosel, the cavity including (a) a volume, (b) a length extending along an axis perpendicular to the strike face, and (c) a width extending along an axis parallel to the strike face.

3. The golf club head of claim 2, wherein the volume of the cavity ranges from 0.1 cm³ to 0.8 cm³.

4. The golf club head of claim 2, wherein the length of the cavity ranges from 0.45 inches to 0.75 inches.

5. The golf club head of claim 2, wherein the width of the cavity ranges from 0.30 inches to 0.35 inches.

6. The golf club head of claim 1, wherein the insert has indicia to indicate the lie angle of the club head.

7. The golf club head of claim 1, wherein the insert is coupled to the hosel over the cavity using a snap fit mechanism.

8. The golf club head of claim 1, wherein the insert is coupled to the hosel over the cavity using an adhesive.

9. The golf club head of claim 1, wherein the insert has electronic indicia indicating the distance to the front, middle, and back of the green of a hole.

10. The golf club head of claim 1, wherein the insert has electronic indicia indicating the range of yardage the golfer may achieve using the golf club head as part of a golf club.

11. A set of golf clubs comprising: at least two golf clubs, each of the at least two golf clubs having a head, the head including: a body having a strike face, a heel portion, and a toe portion; a hosel having a body with a first end, extending from the heel portion of the body of the club head, and a second end, configured to receive a shaft; a cavity positioned adjacent to the body of the hosel; and an insert configured to be secured within the cavity.
12. The set of golf clubs of claim 11, wherein volume of the cavity of each golf club head is different.

13. The set of golf clubs of claim 11, wherein the length and the width of the cavities of each golf club head are different.

14. The set of golf clubs of claim 11, wherein the at least two golf clubs include a first golf club having a first insert, and a second golf club having a second insert.

15. The set of golf clubs of claim 14, wherein the first insert of the first golf club has indicia that is different from the second insert of the second golf club.

16. The set of golf clubs of claim 14, wherein the first insert of the first golf club has indicia that is the same as the second insert of the second golf club.

17. A method of manufacturing the set of golf clubs of claim 11 comprising:

   providing a set of golf clubs having heads with cavities;
   providing a plurality of inserts having indicators, wherein each indicator designates a lie angle;
   bending the hosel and the shaft of each of the golf clubs to a desired lie angle,
   and positioning the insert having the indicator designating the desired lie angle within the cavity of the golf club.

18. A golf club head comprising:

   a body having a strike face, a heel portion, and a toe portion;
   a hosel having a body with a first end, extending from the heel portion of the body of the club head, and a second end, configured to receive a shaft;
   a cavity positioned adjacent to the body of the hosel and configured to receive an insert.

* * * * *