



US 20080076593A1

(19) **United States**

(12) **Patent Application Publication**

Costa et al.

(10) **Pub. No.: US 2008/0076593 A1**

(43) **Pub. Date: Mar. 27, 2008**

(54) **CUSTOMIZED GOLF CLUBS AND METHOD FOR MAKING SAME**

Publication Classification

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(51) **Int. Cl.**
A63B 53/14 (2006.01)
A63B 53/12 (2006.01)
A63B 53/00 (2006.01)
(52) **U.S. Cl.** **473/316; 473/324; 473/300; 473/301**

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(57) **ABSTRACT**

A customized golf club comprising a shaft, a club head body, and a pre-printed, colored, or functional protective wrap applied to the shaft or club head body. A method of customizing golf clubs by applying mass, graphics, logos, decals, or colors to the body or the club head or the shaft by shrink-wrapping or adhering a protective wrap to a portion of the club.

(21) Appl. No.: **11/534,709**

(22) Filed: **Sep. 25, 2006**

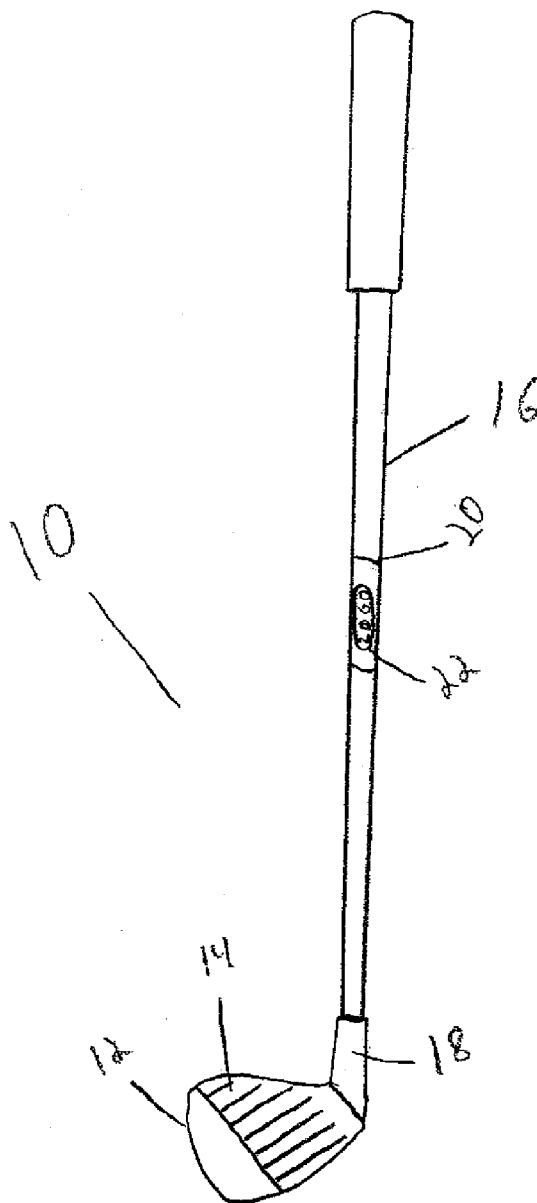
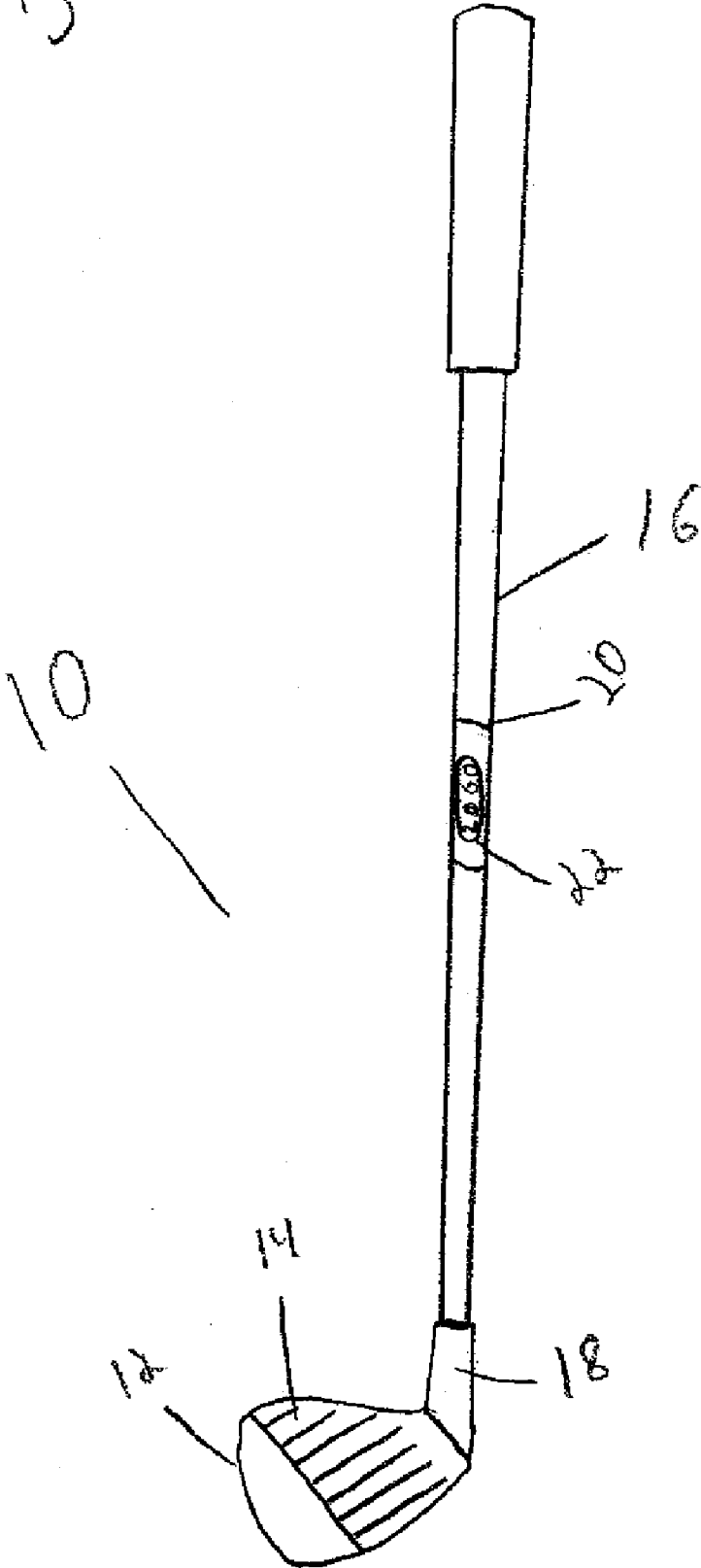
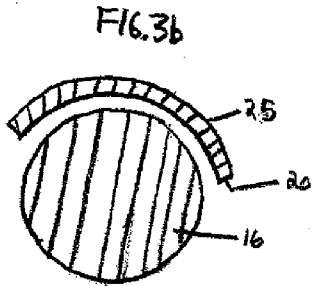
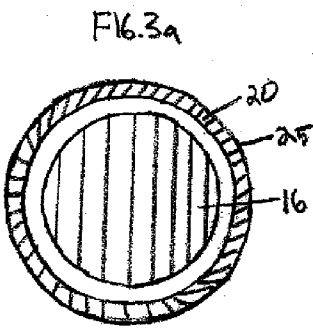
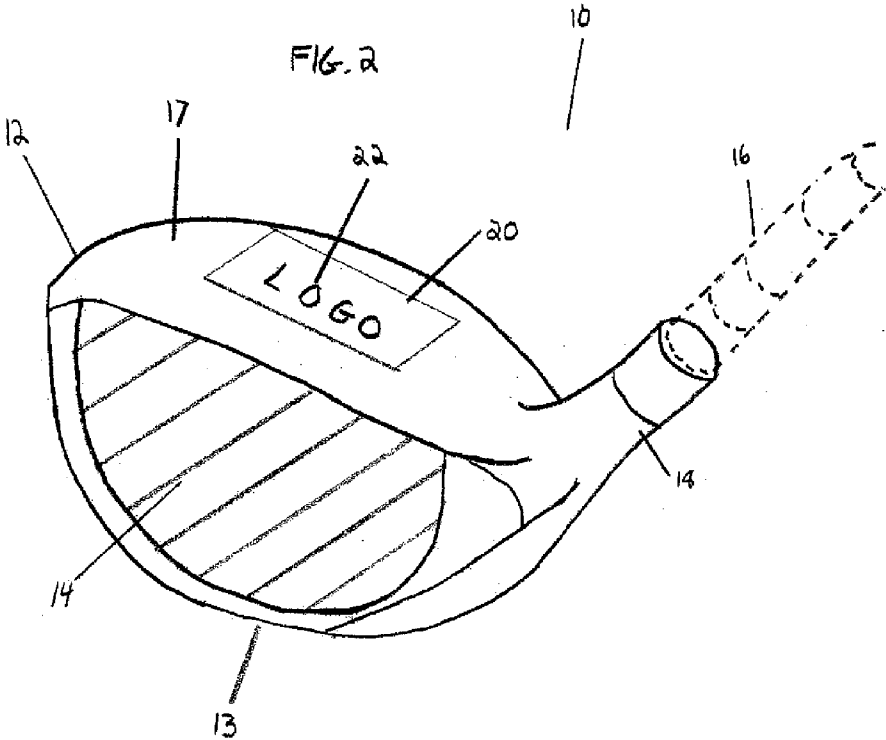
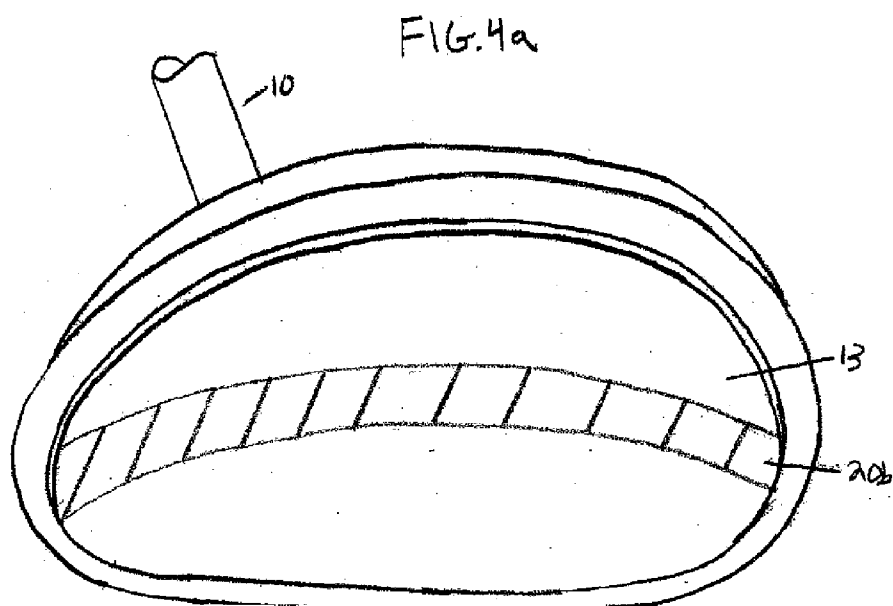
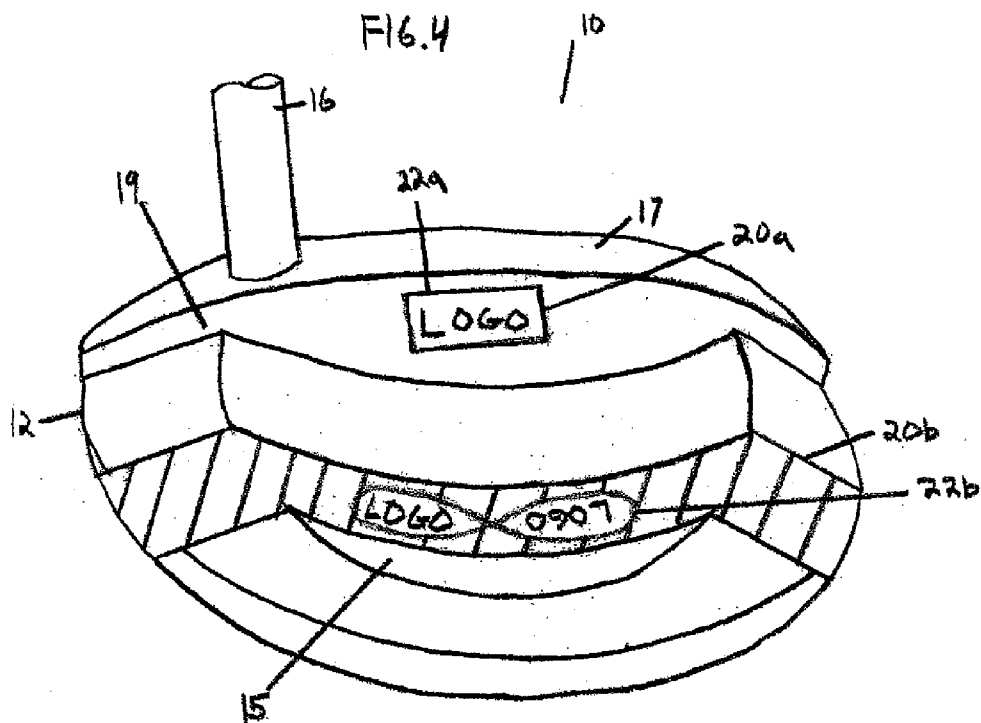


Fig. 1







CUSTOMIZED GOLF CLUBS AND METHOD FOR MAKING SAME

FIELD OF THE INVENTION

[0001] This invention generally relates to customized golf clubs having graphics, decals, colors, or other functional characteristics applied to a portion of the clubs on or within a protective or decorative wrap, and a method of customizing golf clubs by applying graphics, decals, or colors using a protective or decorative wrap such as a shrink-wrap film or pressure-activated adhesive wrap around the shaft and/or the club head, excluding the hitting face area.

BACKGROUND OF THE INVENTION

[0002] Shrink-wrap films are generally made from a polymer plastic, often polyvinylchloride (PVC). Depending upon the type and construction of polymers used, when heat or pressure is applied to the material, it decreases in size to form a seal around or fit to whatever it was covering. At a microscopic level, the long, thin polymer molecules are lined up in rows. When the heat or pressure is applied, the molecules vibrate against one another and begin to tangle and twist together. This tangling and twisting decreases the volume of the shrink-wrap film, creating the shrinking effect around whatever object the film is covering.

[0003] Shrink-wrap films and shrink-wrapping have seen a wide variety of applications, such as CD over-wraps, beverage container labels, car-body advertising, retail product and food packaging, etc. Many of these uses employ printed text, logos, or graphics on the shrink-wrap film to advertise or inform consumers about the respective products. Holographic images can also be shrink-wrapped for increased visual appeal and security applications, as disclosed in U.S. Pat. No. 6,775,036 B2 to Cox et al. entitled "Holographic Shrink Wrap Element and Method for Manufacture Thereof," the disclosure of which is hereby incorporated by reference.

[0004] Because shrink-wrap films are made of polymer plastics, they also protect the underlying surface, such as in sealing food containers, scuba tanks, and even batteries, as disclosed in U.S. Pat. No. 5,756,415 to Call for a "Shrink Wrap Battery Package."

[0005] Shrink-wrapping has been used as a method for applying thin intermediate layers in the manufacturing of golf balls, as disclosed in commonly owned U.S. Pat. No. 7,004,854 to Hogge et al. entitled "Golf Ball with Vapor Barrier Layer and Method of Making Same," and commonly owned U.S. Pat. No. 6,872,774 to Sullivan et al. entitled "Golf Ball with Non-Ionomeric Layer."

[0006] Recently, the customization of golf clubs to the individual users has become popular in the golfing industry, with the emergence of interchangeable grips, shafts, and club heads, removable club head weights, etc. This also includes painting or airbrushing colors, logos, or graphics onto the club head or shaft. However, painting or airbrushing can be expensive and permanent. Hence, there remains a need for ways of customizing golf clubs by applying functional wraps, decals, graphics, or colors to the club head or shaft.

SUMMARY OF THE INVENTION

[0007] The present invention relates to customizing different types of golf clubs (i.e., driver-type, iron-type, and

putter-type) by applying a protective or decorative wrap to at least a portion of the club head body or shaft. The protective or decorative wrap is a traditional shrink-wrap film or a film that uses a pressure or heat activated adhesive to adhere to the surface of the club onto which it is applied.

[0008] In one aspect of the invention, the protective or decorative wrap is applied to at least a portion of the club head body of the golf club. The wrap includes high density fillers such as tungsten in selected portions thereof, such as the sole portion, in order to adjust the center of gravity and moment of inertia of the club head. The wrap may also include a low-friction polymer, such as polytetrafluoroethylene, with the portion of the wrap containing the low-friction polymer applied to the sole portion of the club head.

[0009] In another aspect of the invention, the protective or decorative wrap is applied to at least a portion of the golf club shaft. The wrap includes a polyamide fiber such as Kevlar to change functional characteristics, such as the stiffness of the portion of the shaft covered by wrap.

[0010] In yet another aspect of the invention, the wrap is pre-printed before being applied to a portion of the golf club head or shaft. The wrap is colored or printed with a graphic, logo, hologram, or decal. The wrap also is water resistant or alternatively is covered with an ultraviolet light-resistant layer, such as a luster overlamine layer. The protective or decorative wrap can be a traditional shrink-wrap film or a film that uses a pressure or heat activated adhesive to adhere to the surface of the club onto which it is applied.

DESCRIPTION OF THE DRAWINGS

[0011] In the accompanying drawings, which form a part of the specification and are to be read in conjunction therewith and in which like reference numerals are used to indicate like parts in the various views:

[0012] FIG. 1 is a front view of an iron-type golf club in accordance with an embodiment of the present invention;

[0013] FIG. 2 is a perspective view of a driver or fairway wood-type golf club head in accordance with an embodiment of the present invention;

[0014] FIGS. 3a and 3b show cross-sectional views of shafts of golf clubs with a protective or decorative wrap applied in accordance with the present invention;

[0015] FIG. 4 is a rear view of a putter-type golf club in accordance with an embodiment of the present invention; and

[0016] FIG. 4a is a bottom view of the putter-type golf club in FIG. 4.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] The present invention is directed at golf clubs that are customized by having a protective or decorative wrap applied to at least a portion of the club head body or shaft. Several embodiments of the invention are described in more detail below.

[0018] In one embodiment, the present invention is directed at golf clubs that are customized by having a protective or decorative wrap applied to a portion of the clubs. The golf club comprises a shaft, a club head body portion, and a hitting face. The wrap can be a heat-activated shrink wrap film or a pressure-activated adhesive film, but is most preferably a shrink wrap film, and it is pre-printed with a graphic or decal before application to the club. Alterna-

tively, the protective or decorative wrap is a pressure activated adhesive wrap. In one embodiment, the wrap is applied to a portion of the club head body, and in another embodiment, the wrap is applied to at least a portion of the shaft. It is also possible to apply the wrap to both the club head body and the shaft. The wrap may also be covered with a luster overlamine layer, which acts to provide ultraviolet protection for the graphic that is printed on the wrap. In another embodiment, the wrap is simply colored with one or more colors. In yet another embodiment, the wrap comprises an extra layer, and a holographic image is printed on the extra layer.

[0019] In another embodiment, the present invention is directed at golf clubs that are customized by having a protective or decorative wrap applied to a portion of the shaft of the clubs. In this embodiment, the protective or decorative wrap is embedded with polymer fibers such as Kevlar® so as to alter the strength and stiffness of the shaft. The amount of polymers embedded in the wraps may vary according to the users' desired club characteristics, and users can apply the wrap(s) to different portions of the shaft in order to adjust various points of flexibility. The fibers can be chopped fibers or can run along the entire length of the wrap.

[0020] In yet another embodiment, the present invention features golf clubs wherein a protective or decorative wrap is applied to a portion of the club head. In this embodiment, the protective or decorative wrap is preferably embedded with high density fillers such as tungsten at selected portions thereof. Placement of the wrap, which may come in any number of sizes, with the high density areas on selected parts of the club head, such as the sole, allows users to adjust the moment of inertia and the center of gravity of the club head, thereby changing a golf ball's flight path. Additionally, the protective or decorative wrap may be impregnated with a low-friction polymer such as polytetrafluoroethylene (PTFE), commercially available as Teflon® from DuPont. When applied the sole of the club head, such a wrap may provide further protection and reduced friction in addition to added weight.

[0021] Another embodiment of the invention is directed at a method of customizing clubs by applying a protective or decorative wrap to a portion of the club in accordance with the invention. A golf club having a shaft, club head body portion, and hitting face is provided. The protective wrap, preferably a shrink-wrap film or adhesive film as discussed above, is applied to a portion of the golf club, and then is cured to the portion of the club by an additional step. In one embodiment, the wrap comprises a pressure-activated adhesive and the curing is done by a process of applying pressure to the wrap. Alternatively, the wrap comprises a heat-activated adhesive, and the curing is done by a process of applying heat to the wrap. In other embodiments of the invention, the method further comprises an intermediate step wherein the wrap is pre-printed with a decal, logo, or graphic, preferably with an inkjet printer, before it is applied to the golf club. The wrap utilized may even be an opaque color or colors. In some embodiments, the wrap may be applied to any portion of the shaft, the club head body excluding the hitting face, or any combination thereof. In another embodiment, the method comprises applying a luster overlamine layer over the protective wrap, preferably for ultraviolet light ray protection.

[0022] Referring to the accompanying drawings, FIG. 1 shows an iron-type golf club in accordance with an embodi-

ment of the present invention. Golf club 10 comprises shaft 16 and club head body portion 12, which in turn comprises hitting face 14 and hosel area 18. Shaft 16 is inserted into hosel 18. Protective or decorative wrap 20 is pre-printed with graphic 22 and is applied to a portion of shaft 16. Depending upon the type of adhesive in wrap 20, either pressure or heat is applied to wrap 20 to adhere it to shaft 16. Wrap 20 is preferably a shrink-wrap film comprising a polymer such as polyethylene, but can be any protective or decorative wrap film known in the art that is capable of being pre-printed or colored. Suitable materials for wrap 20 include 3M™ Controlac™ Plus Changeable Graphic Film with Comply™ Performance 3500C and 3M™ Scotchcal™, both available from and manufactured by Minnesota Mining and Manufacturing, Inc. of St. Paul, Minn. This particular embodiment is especially advantageous when the shaft comprises stainless steel. Many golfers utilize clubs with steel shafts, which are generally stiffer than graphite shafts, for improved control. However, stainless steel is not easily painted or otherwise customized, so stainless steel shafts generally remain silver-colored. The inventive wrap provides a way to customize the shaft to the club owner's liking, whatever the material.

[0023] Furthermore, wrap 20 may be impregnated with fibers or fillers such as polycrystalline alumina, boron, silicon carbide, glass, graphite, etc., in order to provide strength or rigidity to certain area(s) of shaft 16 beneath wrap 20. Preferably, a fiber such as Kevlar is embedded within wrap 20. Once applied to the proper area(s) of shaft 16, wrap 20 can be used to adjust the flexibility and performance of shaft 16, and therefore golf club 10. Because wrap 20 is removable, users can customize the flex properties of golf club 10 at will. The fibers can be chopped or may run along the entire length of the wrap, and the impregnated wrap 20 can cover the entire shaft or portions thereof. The thickness of wrap 20 can also be adjusted to change the flexibility of the shaft.

[0024] FIG. 2 shows a driver or fairway wood-type golf club head in accordance with an embodiment of the present invention. Club head body 12 includes hitting face 14, hosel area 18, and crown portion 17. As shown, graphic 22 is pre-printed on wrap 20, and protective or decorative wrap 20 is then applied to crown portion 17. Depending upon the type of adhesive used in wrap 20, either pressure or heat is applied to adhere it to crown portion 17. Alternatively, wrap 20 may be applied to any part of the club head body 12, excluding hitting face 14.

[0025] Wrap 20 may also be impregnated with high-density fillers, such as tungsten, preferably when wrap 20 is added to the club head. By adding the high-density fillers to portion(s) of wrap 20, users may adjust the properties of club head body 12, such as moment of inertia and center of gravity. For example, a wrap 20 impregnated with a high-density filler on portions thereof that is applied to crown portion 17 of club head body 12 would shift the center of gravity up vertically, resulting in a lower trajectory shot. Contrariwise, applying wrap 20 to sole area 13 would shift the center of gravity lower in club head body 12, resulting in a higher trajectory. Preferably, wrap 20 could be designed to contain areas with or without fillers, or even filler gradients to adjust the properties of club head body 12.

[0026] FIGS. 3a and 3b both show cross-sectional views of shafts of golf clubs in accordance with the present invention. In FIG. 3a, shaft 16 is shown completely sur-

rounded by protective or decorative wrap 20. Optional luster overlamine layer 25 may be added by a similar shrink-wrapping process as wrap 20, and may or may not completely surround shaft 16. In FIG. 3b, another embodiment is shown where wrap 20 is only applied to part of the circumference of shaft 16. Optional luster overlamine layer 25 is shown in this view as well as covering about the same amount of surface area as wrap 20, although it is appreciated that layer 25 may be applied so as to cover either more or less surface area than protective wrap 20.

[0027] A rear view of a putter-type club in accordance with the present invention is shown in FIG. 4. Club 10 comprises shaft 16 and club head body 12, which comprises crown 17, back portion 15, and upper back portion 19, as well as a sole 13 (shown in FIG. 4a) and a hitting face (not shown). Wraps 20a and 20b have graphics 22a and 22b printed on each respectively, each wrap is applied to a portion of club 10, and the appropriate pressure or heat is used to activate the adhesive included in each wrap. In FIG. 4, wrap 20a displaying graphic 22a is shown applied to upper back portion 19. In FIG. 4 and FIG. 4a, wrap 20b is applied to back portion 15 of club head body 12, but extends around the body to cover a portion of sole 13. For aesthetic purposes, it may be seen as advantageous by some golfers to apply wrap 20b in this manner, while displaying graphic 22b on the back portion 15 of club head body 12. Wrap 20b may also be impregnated with a high-density filler as seen above or a low-friction polymer such as PTFE, commonly known as Teflon®. The low-friction PTFE is particularly advantage in wrap 20b in order to minimize frictional contact with the grass while putting. Using a high-density filler in wrap 20b helps to product a “weighty” feel that many golfers desire in putter-type clubs, but provides the ability to adjust the weight at a moment’s notice, unlike other fixed-weight clubs.

[0028] While it is apparent that the illustrative embodiments of the invention disclosed herein fulfill the objectives stated above, it is appreciated that numerous modifications and other embodiments may be devised by those skilled in the art. Such modifications include that the protective or decorative wraps may comprise different materials known in the area, the graphics or colors may be different, the wraps may be applied to different parts of the club head or shaft, etc. The decorative or protective wrap can also be applied on

the entire shaft from the hosel to the grip and can be applied on the entire club head, except the hitting face. Therefore, it will be understood that the appended claims are intended to cover all such modifications and embodiments, which would come within the spirit and scope of the present invention.

1. A golf club comprising a shaft, a grip disposed on the shaft, a club head, and a hitting face, wherein a portion of the shaft or the club head is surrounded by a wrap, wherein said wrap is activated by heat or pressure.

2. The golf club of claim 1, wherein at least a portion of the club head is surrounded by the wrap.

3. The golf club of claim 2, wherein at least a portion of the wrap comprises a high-density filler material.

4. The golf club of claim 3, wherein the high-density filler material comprises tungsten.

5. The golf club of claim 2, wherein at least a portion of the wrap comprises a low friction polymer.

6. The golf club of claim 5, wherein the wrap comprises polytetrafluoroethylene.

7. The golf club of claim 5, wherein said at least portion of the wrap covers at least a portion of the sole.

8. The golf club of claim 1, wherein at least a portion of the shaft is surrounded by the wrap.

9. The golf club of claim 8, wherein the wrap comprises fibers.

10. The golf club of claim 9, wherein the fibers comprise Kevlar.

11. (canceled)

12. (canceled)

13. The golf club of claim 1, wherein the wrap comprises a heat-activated adhesive.

14. (canceled)

15. (canceled)

16. (canceled)

17. (canceled)

18. (canceled)

19. The golf club of claim 2, wherein substantially the entire club head except the hitting face is surrounded by the wrap.

20. The golf club of claim 8, wherein substantially the entire shaft is surrounded by the wrap.

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