A relatively rigid golf club grip and a method for manufacturing a relatively rigid golf club grip. The method comprises machining the club grip from a metal or other generally rigid material including a butt and main body from a stock piece of material. The golf club grip also includes a tip portion that may, but need not be, made from relatively rigid material.

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START

310 BILLE OF RAW MATERIAL

312 MACHINE EXTERIOR DIMENSIONS

314 MACHINE BORE

316 MACHINE SURFACE TEXTURE

320 REMOVE BURRS

322 (OPTIONAL): MACHINE ALIGNMENT MARKS, LOGOS, SPECS, ETC.

324 PAINT AND FILL OPTIONAL MARKS, ETC. (AS REQUIRED)

326 (OPTIONAL): ANODIZE GRIP
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326 (OPTIONAL): ANODIZE GRIP

FIG. 3
GOLF CLUB GRIP AND A METHOD OF MANUFACTURE

CROSS-REFERENCED APPLICATIONS

[0001] This application claims the benefit of priority from pending U.S. provisional patent application entitled GOLF CLUB GRIP AND A METHOD OF MANUFACTURE, Ser. No. 60/476,326, filed Jan. 6, 2003, the contents of which are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The invention relates generally to golf clubs and, more particularly, to a relatively rigid golf club grip made from a relatively rigid stock material.

[0004] 2. Description of the Related Art

[0005] In recent years, a great amount of attention has been given by golf club designers, engineers, and manufacturers towards head and shaft design, engineering, technology and materials and manufacturing techniques, to increase the quality, consistency and the performance of those components used in golf clubs. However, the slip-on rubber grip is very similar if not almost entirely unchanged from previous designs, technologies, materials, manufacturing and assembly techniques used for decades.

[0006] Slip-on rubber grips are generally manufactured using one of two methods. The first method is to make a flat stock of rubber, greater than the amount needed in the finished grip and place it in a two-part negative cavity mold that comprises the putter grip and hollow space for the shaft in the middle, and is open on one end. The rubber is compressed and melted into the shape of the grip using heat and pressure applied to the tool. This process yields a grip that contains flashing where the excess rubber is squeezed and melted out through the parting lines of the mold. This flashing must be removed before the grip can be assembled or used.

[0007] The second, most common method is that of injection molding. In this technique, molten rubber is injected into a hollow mold to form the shape of the grip when the rubber hardens. A mandrel or core bar is placed in the mold to make a cavity on the inside of the grip so it is hollow and open on the bottom end, near the golf club's head, so it can be slipped on over the butt end of a golf shaft. While the molds themselves have increased in quality in recent years, the rubber grip that is produced is still imperfect as the grip is often sanded by hand after it is removed from the mold to remove flashing from the parting lines in the molds.

[0008] Even greater problems in consistency and accuracy of specifications are created when the slip-on rubber grip is assembled on to the golf club. This is usually achieved by preparing the naked shaft with one or more layers of adhesive backed or usually double adhesive tape. As shafts may be tapered, and the tape comes in straight strips, the tape most often gets overlapped in some areas, which builds up that area higher than those having single layers. This occurs whether the tape is applied in a lengthwise fashion perpendicular with the shaft or is wrapped around the shaft in a spiral motion. Also, as the tape wrapping is done by hand, and often in a hurry, it can also become wrinkled, adding larger irregularities to the shape and geometry of the butt. This wrinkling and bulging is magnified when multiple layers of tape, a common practice used to build up the diameter of the rubber slip-on grip, are used. When the slip-on rubber grip is applied over the tape, it conforms to the shape of the tape underneath it, and is thus raised in high spots where the tape is irregular in thickness.

[0009] The slip-on rubber grip is applied over the adhesive tape using solvent or paint thinner or similar liquid material to temporarily break down the adhesive of the tape and allow the grip to be slipped over it and onto the shaft until the inner butt end cap of the grip meets the top of the shaft. The rest of the slip-on rubber grip is stretched down the length of the shaft. Depending on how well the solvent breaks down the adhesive and how much larger the exterior diameter of the shaft and tape is than the slip-on grip's inside diameter, the grip may be difficult to stretch on in its original length.

[0010] More problems with consistency and accuracy can occur when the grip itself can absorb the solvent material, making it swell and distort from its original shape. Furthermore, the solvent evaporates over time, and the grip can be moved or contract at different rates during this drying process.

[0011] Various manufacturing techniques have been attempted to achieve a golf grip decreasing the inconsistencies of the all rubber slip-on grip. For example, U.S. Pat. No. __________ to Winn ("Winn"), entitled, "_________" discloses the use of polymer and cloth material that is wrapped around a rubber under-listing which is stretched over the butt end of a golf shaft in traditional manners used for well over a hundred years. By wrapping the material around the under-listing, either before or after assembly to the club, however, the grip's surfaces are often very irregular and not properly aligned with the striking face of the golf club.

[0012] Furthermore, the Winn grip is often sold as an aftermarket product, wherein a consumer, retailer or golf professional is required to assemble the grip on a golf club after removing the club's old grip. This process is even more difficult to perform because those doing this work do not have the means to accurately and consistently gauge the smoothness of the grip during assembly. The assembly process is almost always done by "eye", that is the person doing the assembly looks down the length of the grip towards the face of the golf club and tries to adjust the grip's alignment so that its indicators are oriented perpendicular to or parallel to the face depending on the orientation of the indicators.

[0013] Various manufacturing techniques, using fixtures to help align the slip-on rubber grip have been devised and employed by manufacturers, assembly operations and club fitters, club makers and club repair services. A common method for assembly stations uses an air activated clamp to hold the shaft. Some versions also have a fixture to align the face, usually with the toe pointing to 0 degrees in the 12 o'clock position. The grip is then slipped on and the assembler works the grip back and forth until it appears straight.

[0014] In other assembly station applications, a fixture is devised that holds a flat device that is hinged and placed over the grip to align indicators on the grip to predetermined locators on the alignment device.

[0015] In yet other assembly stations, a light assembly is affixed to the assembly table in a position where it can shine...
a focused, narrow vertical beam down the length of the grip, for the assembly operator to match against predetermined alignment locators on the grip. Alternatively, a laser beam is focused up and down the grip to match against predetermined alignment locators on the grip. However, as human operators have to match these indicators by “eye”, while often producing hundreds of clubs per day, and because the rubber is relatively soft and pliable, these alignment devices are not perfectly reliable.

[0016] Furthermore, the grip may be able to be straightened in some dimensions, such as the top area, but still be crooked in another such as the bottom. Or, the butt and lower end of the grip may be straight but the grip could still be misaligned in the middle portion. Additionally, the grip can be misaligned after assembly by touching the grip while it is still wet and moving it from the assembly station to the next station. Also, owing to the elastic properties of the grip, and different drying rates of the solvents, it may retract non-uniformly, causing further distortion of the grip’s geometry and alignment.

[0017] Yet another problem arises during use of the golf club. Frequent use can misalign the grip, especially if and when the adhesive in the tape loses its adhesion properties. The golf swing and the repeated contact with the ball and against the turf, as well as stresses put on the grip putting the club in and out of the golf bag, can misalign the grip from its original shape and also wear away the relatively soft rubber material so it is misshapen.

[0018] Yet another problem with the rubber slip-on grip is that it absorbs oil and perspiration from the golfer’s hands, which builds up, collecting dirt and eventually making the grip slippery.

[0019] Yet another problem with the slip-on rubber grip is that the fact that the soft, pliable characteristics make the grip alignment and geometry change during the swing and at impact, making the golf club harder to control consistently. This fact also makes it difficult to add any training aids to the grip with any precision, structural integrity and stability. Necessary requirements for training aids to work effectively.

[0020] Therefore, there is a need for a more precise and consistent golf club grip and a method for manufacturing and assembling a golf club grip with greater accuracy, consistency and precision. Furthermore, there is an additional need for a grip that more durable and retains its precise dimensions and alignment with the club during manufacture, during use and over time. Furthermore, there is a need for a grip that provides improved uniformity of construction, increased variability and efficient, cost effective customization of grip shapes and surface textures, and improved performance characteristics over prior, known golf club grips.

OBJECTS OF THE INVENTION

[0021] It is an object of the invention to fulfill the foregoing needs.

[0022] In particular, it is an object of the present invention to provide a golf club grip that is more precise and consistent.

[0023] Furthermore, it is an object of the invention to provide a grip that is more durable and retains its precise dimensions and alignment with the club during manufacture, during use and over time.

[0024] Furthermore, it is an object of the invention to provide a grip that provides improved uniformity of construction, increased variability and customization of grip shapes and surface textures, and performance characteristics over prior, known golf club grips. It is a still further object of the invention to provide a method for manufacturing and assembling a golf club grip with greater accuracy, consistency and precision, and to facilitate the mechanical applicability of optional integrated training aids, weights, and adjustable features.

SUMMARY OF THE INVENTION

[0025] In accordance with an embodiment of the present invention, a relatively rigid golf club grip comprising a body portion and a tip portion composed primarily of relatively rigid material, the tip portion having a bore sized for receiving a golf club shaft.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] For a more complete understanding of the present invention, and the advantages thereof, reference is now made to the following description taken in conjunction with the accompanying drawings, in which:

[0027] FIG. 1 illustrates a machined golf club grip that embodies the present invention;

[0028] FIG. 2 illustrates the components, prior to assembly, of the machined golf club grip that embodies the present invention;

[0029] FIG. 3 is a flow chart depicting a method of manufacturing the golf club grip; and

[0030] FIG. 4 and FIG. 5 illustrate a machined golf club grip designed for use on a putter, having both pistol and paddle shape geometry features, manufactured in accordance with one embodiment of the present invention.

DETAILED DESCRIPTION

[0031] Referring to FIG. 1 of the drawings, the reference numeral 100 generally designates a golf club grip embodying features of the present invention. The golf club grip 100 may generally comprise a tapered main body grip portion 110, a butt or top end cap portion 112, and a tip or bottom end portion 116. The golf club grip 100 is shown mounted on a golf club shaft 118. The golf club grip 100 in a finished state may include an optional alignment mark 120 on the tip portion 116 and another optional alignment mark 122 on the butt portion 112. These alignment marks 120 and 122 can be used both to assist in placement of the golf club grip 100 on the golf club shaft 118 in the proper position and to assist in lining up shots during use. Preferably, the golf club grip 100 in a finished state has been de-burred and anodized or surface coated or wrapped as desired.

[0032] FIG. 2 illustrates the golf club grip 100 in an unassembled state, after manufacturing the components and prior to assembly. The golf club grip 100 generally comprises a tapered main body grip portion 110, a butt or top end cap portion 112, and a tip or bottom end portion 116.

[0033] FIG. 3 is a flow chart depicting steps that may be performed in accordance with one embodiment of the present invention in manufacturing the golf club grip 100, particularly the tapered main body grip portion 110. The
process begins in step 310, wherein a stock material, preferably a billet of 6061 Aluminum alloy, is placed into a CNC machine.

[0034] Preferably, the stock material comprises 2-inch diameter bar stock or 2.5" square or rectangular stock of an aluminum alloy whose composition by weight is commonly referred to as 6061 Aluminum Alloy. If the rectangular billet stock is used, it can be pre-drilled to make a hollow round bore hole, extending partially or completely through the length of the grip, in advance of machining. Alternatively, the optional internal bore can be made after machining the shape of the grip, using standard tooling or rifle barrel tooling.

[0035] The 6061 aluminum alloy is preferred because of the ability to machine the alloy as discussed below while retaining the high strength and durability characteristics without becoming deformed, wearing or altering the specifications during use. Furthermore, this alloy may be readily anodized in many colors, or powder coated in many colors and textures, or bead blasted or treated with shot peen to achieve a higher surface strength and hardness after machining. Therefore many surfaces can be provided that are more consistent due to the precision of the grip geometry. Other metals and alloys, however, may be used to achieve the desired effect.

[0036] In step 312, the metal billet is placed in a four axis tooling fixture that automatically turns the stock material underneath the cutting tool as the tool bed moves the stock along the X and Y coordinates. The main body grip portion 110 may be machined to approximately 95% of its final shape. In step 314, the main body grip portion 110 is bored to provide an interior diameter (ID) 117 for receiving the golf club shaft 118.

[0037] In step 314, the metal billet, while at approximately 95% of the final shape of the grip, is machined with a selection of tooling cuts and passes to provide a predetermined, uneven, yet precise and consistent surface texture. In the preferred embodiment, which utilizes a 6061 Aluminum Alloy, the CNC machining may be performed utilizing a computer controlled, 15 hp vertical axis end mill, resulting in a pre-form shape that is approximately 95% of the net shape, i.e., approximately 95% of the final shape as depicted in FIG. 2.

[0038] In yet another embodiment the stock material is chosen from a Nylon material, with a preferred Durometer hardness rating of at least Shore D 60.

[0039] In yet another embodiment the stock material is chosen from a Dupont Delrin material, with a preferred Durometer hardness rating of at least Shore D 60.

[0040] In yet another embodiment the stock material is manufactured in advance to near the finished shape, using die-casting, investment casting, sand casting, injection molding, extrusion or the like.

[0041] Machining or chemical milling will be required to achieve the final size and shape. In step 320, any burrs are removed from the metal billet. Once the burrs are removed, the machined part will have the desired shape and profile of the base version of the final product.

[0042] If it is desired to have different versions of the golf club grip that vary to a degree in certain characteristics, such as identifying marks, logos, proper hand placement guides, weight or center of gravity, but are otherwise of substantially the same size and shape, this can be accomplished in accordance with an embodiment of the invention by additional machining, engraving, laser engraving, stamping, etching or chemical milling of the desired portion of the machined part made for the base version. Thus, for example, in step 322, the main body portion 110 is optionally further machined and/or chemically milled to add alignment and hand placement guides. In step 324, the optional marks are painted and filled as required, thus allowing USGA conformance regardless of size, depth, complexity and placement.

[0043] Preferably, the metal billet is machined, as described above with reference to steps 310-320, to result in the largest desirable outside dimension golf club grip, that is, one with a larger diameter. Smaller diameter golf club grips can then be achieved by machining or milling the grip to a thinner dimension, according to user fitting and preference. Likewise, varying geometries and surface textures and patterns can be machined from the base grip. This process allows for a single machining process that creates essentially identical golf club grips with differing surface textures, alignment markings and cosmetics.

[0044] Alternatively, differing surface textures, alignment markings and cosmetics may be obtained by utilizing different computer programs to machine the final net shape from the first stage.

[0045] Various machined surface textures and patterns can be selected from among:

[0046] A fish-scale pattern made with the use of a face mill tool and two or three cutters versus five or six cutters typically used;

[0047] A jeweler’s cut pattern made with the use of a small jeweler’s end mill in a repeating, overlapping, staggered honeycomb pattern;

[0048] troughs running vertically, horizontally, diagonally, overlapping, or any combination thereof made using a bull nose end mill, wherein a smooth-to-rough texture can be obtained by adjusting the size of the tool, as the depth and spacing between rows, and/or the feed rate; or

[0049] a bull nose dimple pattern made in a honeycomb or offset-row pattern, wherein the size, depth, and spacing of the dimples can be altered to obtained varied effects to the surface pattern and texture.

[0050] Combinations of any or all of the afore-mentioned patterns may be applied to various parts of the grip as desired. Standard grip patterns can be duplicated, for example: a wrap pattern mimicking the shape of a leather-wrapped grip, including ridges wrapped diagonally and holes or indentations replicating perforations, and the like. Holes can also be formed in the grip pattern to reduce weight. Such holes can also be filled with materials such as rubber, plastic, epoxy, cork, leather, synthetics and the like for increased traction, or the hollow grip with holes can be placed into a co-mold to then cast or inject rubber, plastic, Delrin or other injectable, castable or moldable materials into and through the openings for an integrated two or multi-material grip.
[0051] In step 326, the club grip may be anodized to increase its surface hardness, durability, resistance to oxidation and to add cosmetic coloring. The anodizing is preferably performed after the welding step, sanding and polishing the weld, and final deburring. However, if desired for a particular color, the anodizing treatment can be conducted prior to welding the pieces together. The exterior surfaces may also be coated with a powder coat material for durability and distinctive cosmetics.

[0052] Alternatively, if the butt cap is mechanically bonded, such as with Allen screws, epoxy, press-fit or with retaining rings, then the butt cap can be finished and anodized separately from the main grip portion.

[0053] FIGS. 4 and 5 illustrate an example of a golf club grip, namely pistol paddle putter grip, manufactured according to one embodiment of the process described above. This example is provided for illustrative purposes only and should not limit the present invention in any manner. Accordingly, the geometries, shape and texture may be altered as desired by the golf club designer to obtain the desired shape and textural characteristics without departing from the spirit of the present invention.

[0054] The geometries of the various portions and the surface textures are preferably determined by the computer milling program, without the need for additional steps of machining. However, as described above, limited variations in geometry, surface texture, markings and alignment guides such as those desired for different versions of the base club grip can be achieved by additional machining, engraving, stamping, chemical milling, application of various surface treatments such as powder coating or wrapping the base unit with any type of material such as leather, rubber, nylon cloth, synthetic cloth or fiber, cotton, micro-fiber, or any combination thereof.

[0055] In this embodiment, the tip portion 116 can have an outside diameter of approximately 0.65° and a length of approximately 0.75°. In the embodiment depicted in FIGS. 4 and 5, the center of the main grip portion can extend to a height of approximately 0.75° from the bottom of the main body portion of the grip, and intersects the plane of the paddle portion at approximately 0.75° from the heel. In one embodiment, the total weight of the golf club grip 100 is approximately 150 grams (140 grams of metal weight plus 10 grams of internal weighting material). The machining process described above allows for a thin, light body to be produced. As a result, weighting material, such as lead plugs and lead tape and the like, may be added to the interior as is known in the art to further modify the center-of-gravity, swing weight and total weight as desired.

[0056] A means for reliable and accurate assembly to the golf club is also provided. The manufacturing method comprises machining a billet of bar or rectangular stock, or the prefabricated gross shape of suitable material into a net, final shape of the grip using state-of-the-art Computer Numerical Controlled (“CNC”) milling machines.

[0057] The stock material of the grip can be varied from a selection of materials that include Aluminum Alloys, Metal Alloys, Steel, Copper, Brass, Nickel, Nylons, Delrin, UHMW, Hard Rubbers, Composites, including Carbon Fiber, Carbon-Carbon, Graphite Prepreg (linear or cloth) Kevlar, Boron, Metal Matrix Composite, Phenolic, Wood and the like or any combination thereof.

[0058] To provide traditional feel to the golfer’s hands, the machined grip may be covered in any sort of material, but still possess the advantages of the superior precision manufacturing method and assembly methods provided by the present invention. The exterior surface material may be leather, or thin precise rubber stretched, held in with shims in grooves, sealed with end cap and butt cap. Adjustable, customizable, interchangeable baseball stitch, wrapped in leather, (cow, pig, deerskin, buffalo, elephant, ostrich, alligator, shark), micro-fiber or other cover material are suitable for use as a grip. The grip can be used without any cover material. Alternatively, cover material may be applied to select portions of the grip. All or a portion of the grip may alternatively or additionally be may be coated in paint, anodized, plated such as nickel, brass, chrome or copper, or powder coated with multiple color-coded for personalized grips or with various reminders for an instructor grip, or alignment or training or teaching or teachers’ indicators, and the like. Any of the as-cast, and as-milled surfaces and any of the coated surfaces can be coated in a multi-part outer coating such as a multi-part clear rubber-like paint with tackifying agents such as resin added to provide added grip, even in wet conditions or heavy perspiration.

[0059] The grip can be machined using cutting tools and predetermined direction of the cutting passes that the tools travel on, as programmed into the machine’s computer, that form various patterns and surface textures to provide smooth or rougher texture as desirable to individual golfers’ preferences. Various grip geometries may also be provided to suit virtually any taste, by replicating popular shaped grips already available in rubber slip-on grips, by modifying those slightly or by designing entirely new shapes.

[0060] Particular attention should be used to design and manufacture grips that 20 conform to the Rules of Golf as determined by the United States Golf Association and the Royal and Ancient, golf’s two main governing bodies which dictate those rules and make decisions on new equipment’s conformity.

[0061] Regardless of the exterior shape and surface pattern, a means of assembly and permanently or semi-permanently affixing the machined grip to the putter shaft is also 25 addressed by this invention. A more consistent and reliable assembly can be achieved by several means. The first is to machine a hollow portion into the lower end of the grip that is closest to the top of the head of the golf club, to allow the butt of the golf shaft to be inserted into it as with a traditional rubber slip on grip. However, epoxy or some other permanent or semi-permanent type bonding material can be used rather than the weak double sided tape commonly used with rubber slip on grips.

[0062] Alternatively, a press fit bond can be achieved by forcing the grip onto the shaft where the shaft O.D. is slightly larger than the grip I.D. In one embodiment, a retaining compound, such as the commercially available Loctite brand or other similar product can be used to secure the press fit bond, and drive out any air water and seal against those or other contaminates, filling any voids and forming a thermoset bond, reducing the likelihood of corrosion, oxidation or rattling or vibration between the bonded parts.

[0063] In another embodiment, the juncture between the grip and the shaft is soldered or welded.
Yet another means of affixing the machined grip to the shaft is by fabricating a stem at the end of the grip that is then inserted into the butt-end interior of the putter shaft. This stem-protruding stem assembly requires the use of a cut down or shorter shaft. Again, epoxy or a press fit assembly can be used, or welding or soldering when the materials are compatible, such as steel to steel, alloy to alloy or titanium to titanium.

Yet another means of affixing the machined grip to the shaft is by the use of an adaptor that is inserted into and affixed to the inside butt end of the shaft and then inserted into and affixed to the inside diameter of the hollow machined grip. This variation can be used to retrofit the grip to varying diameter shafts.

Yet another means of affixing the machined grip to the shaft is by fabricating a stem at the end of the grip that is then inserted into an adaptor sleeve that is then inserted into and affixed to the butt-end interior of the putter shaft. This variation can also be used to retrofit the grip to varying diameter shafts.

Yet another means of affixing the grip portion to the shaft or the intermediate adaptor is by soldering or welding. This can be achieved when the machined grip material is compatible for soldering or welding with the shaft or adaptor material. For instance, if the grip is machined from aluminum, such as 6061, and the intermediate adaptor or shaft is also made from an alloy material, a weld can be formed to bond the two components permanently. A fixture is constructed to position grip and the shaft or intermediate adaptor so that they are precisely aligned in a predetermined setting so that each and every putter or other club assembled in this way is very precise.

A top end cap or butt portion can also be fabricated from bar or rectangular stock material and affixed to the tapered main body grip portion of the grip to form the golf club grip. The joining of the two grip components may be achieved by slip fit with epoxy, press fit with or without retaining compound, by using one or more pins and or threaded screws from the top into threaded receptacles, into the shaft itself and or in the bottom portion or by soldering or welding.

Additionally, a rubber end cap can be used to reduce cost and provide cushioning when the putter is placed into a golf bag, for instance. The rubber can be used for the entire end cap or for just a portion of it, protruding to the furthest portion of the putter to provide cushioning.

It is understood that the present invention can take many forms and embodiments. Accordingly, several variations may be made in the foregoing without departing from the spirit or the scope of the invention. For example, the multi-piece construction may consist of other elements of the club grip, such as one piece incorporating the top of the butt, body, and tip and a second piece incorporating the bottom portion of the butt, body and tip of the grip. Alternately, the multi-piece construction may consist of other elements of the club grip, such as one piece incorporating the sides of the butt, body and tip of the grip, another piece having the butt, body and tip of the grip. Other combinations are also possible.

In one embodiment, the grip can be made using either a die-cast process or an injection-cast process, the top and portions of the sides of the grip milled flat, leaving the other rounded areas as they were cast, including any textures created in the castings. A \( V \)-shaped portion may also be milled in the bottom of the grip, under the fingers, as desired. Other embodiments may be created using alternative methods of fabrication, such as sand casting, forging, forging and milling, sintered metal injection molding (MIM), sintered compression molding, extrusion, extrusion and milling, hydro-forming, press forming sheet stock, including perforated sheet stock, and the like. These alternative parts can make up the whole grip, or adjustable portions, such as an optional, replaceable, adjustable pistol section only with various size pistons sections that fit into a universal milled pocket and screw in place.

Having thus described the present invention by reference to certain of its preferred embodiments, it is noted that the embodiments disclosed are illustrative rather than limiting in nature and that a wide range of variations, modifications, changes, and substitutions are contemplated in the foregoing disclosure and, in some instances, some features of the present invention may be employed without a corresponding use of the other features. Many such variations and modifications may be considered obvious and desirable by those skilled in the art based upon a review of the foregoing description of preferred embodiments. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the scope of the invention.

1. A relatively rigid golf club grip comprising a body portion and a tip portion composed primarily of relatively rigid material, the tip portion having a bore sized for receiving a golf club shaft.

2. The golf club grip of claim 1, wherein the relatively rigid material is a metal.

3. The golf club grip of claim 2, wherein the metal is aluminum.

4. The golf club grip of claim 3, wherein the aluminum is 6061 alloy.

5. The golf club grip of claim 1, wherein the relatively rigid material is a non-metal having a Durometer hardness of at least Shore D 60.

6. The golf club grip of claim 1, wherein the relatively rigid material is composed primarily of Nylon.

7. The golf club grip of claim 1, wherein the relatively rigid material is composed primarily of Delrin.

8. The golf club grip of claim 1, wherein the relatively rigid material is composed primarily of wood.

9. The golf club grip of claim 1, wherein the relatively rigid material is composed primarily of fiber reinforced composite.

10. The golf club grip of claim 1, wherein the body portion and the tip portion are machined from a single piece of stock.

11. The golf club grip of claim 1, wherein the body portion and the tip portion are cast as a unit to a near-net shape.

12. The golf club grip of claim 1, wherein the body portion includes a textured surface.

13. The golf club grip of claim 12, wherein the textured surface is mechanically formed.

14. The golf club grip of claim 12, wherein the textured surface includes a fish scale pattern.
15. The golf club grip of claim 12, wherein the textured surface includes a jeweler’s cut pattern.

16. The golf club grip of claim 12, wherein the textured surface includes troughs.

17. The golf club grip of claim 12, wherein the textured surface includes a bull nose pattern.

18. The golf club grip of claim 12, wherein the textured surface is chemically milled.

19. The golf club grip of claim 1, further comprising a relatively non-rigid covering over at least portions of the body of the grip.

20. The golf club grip of claim 19, wherein the relatively non-rigid covering is rubber.

21. The golf club grip of claim 19, wherein the relatively non-rigid covering is a leather or leather-like material.

22. The golf club grip of claim 1, wherein at least a portion of the grip is powder coated.

23. The golf club grip of claim 3, wherein at least a portion of the grip is anodized.

24. The golf club grip of claim 2, wherein the body portion and the tip portion are forged.

25. The golf club grip of claim 1, wherein the body portion and the tip portion are milled.

26. The golf club grip of claim 2, wherein the body portion and the tip portion are sintered metal injection molded.

27. The golf club grip of claim 1, wherein the body portion and the tip portion are extruded.

28. The golf club grip of claim 1, wherein the body portion and the tip portion are hydro-formed.

29. The golf club grip of claim 1, wherein the tip portion includes an alignment mark.

30. The golf club grip of claim 1, wherein the butt portion includes an alignment mark.

31. A method of making a golf club grip comprising the steps of:

machine a billet of relatively rigid material to a near net desired grip shape and

machine a bore in an end of the grip to accept a golf club shaft.

32. The method of claim 31, further comprising machining alignment marks on the grip.

33. The method of claim 31, wherein the relatively rigid material is a metal.

34. The method of claim 31, wherein the relatively rigid material is aluminum.

35. The method of claim 31, wherein the relatively rigid material is 6061 aluminum alloy.

36. The method of claim 31, wherein the relatively rigid material is a non-metal having a Durometer hardness of at least Shore D 60.

* * * * *