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STITES

(54) **SHAFT STIFFENING DEVICE**

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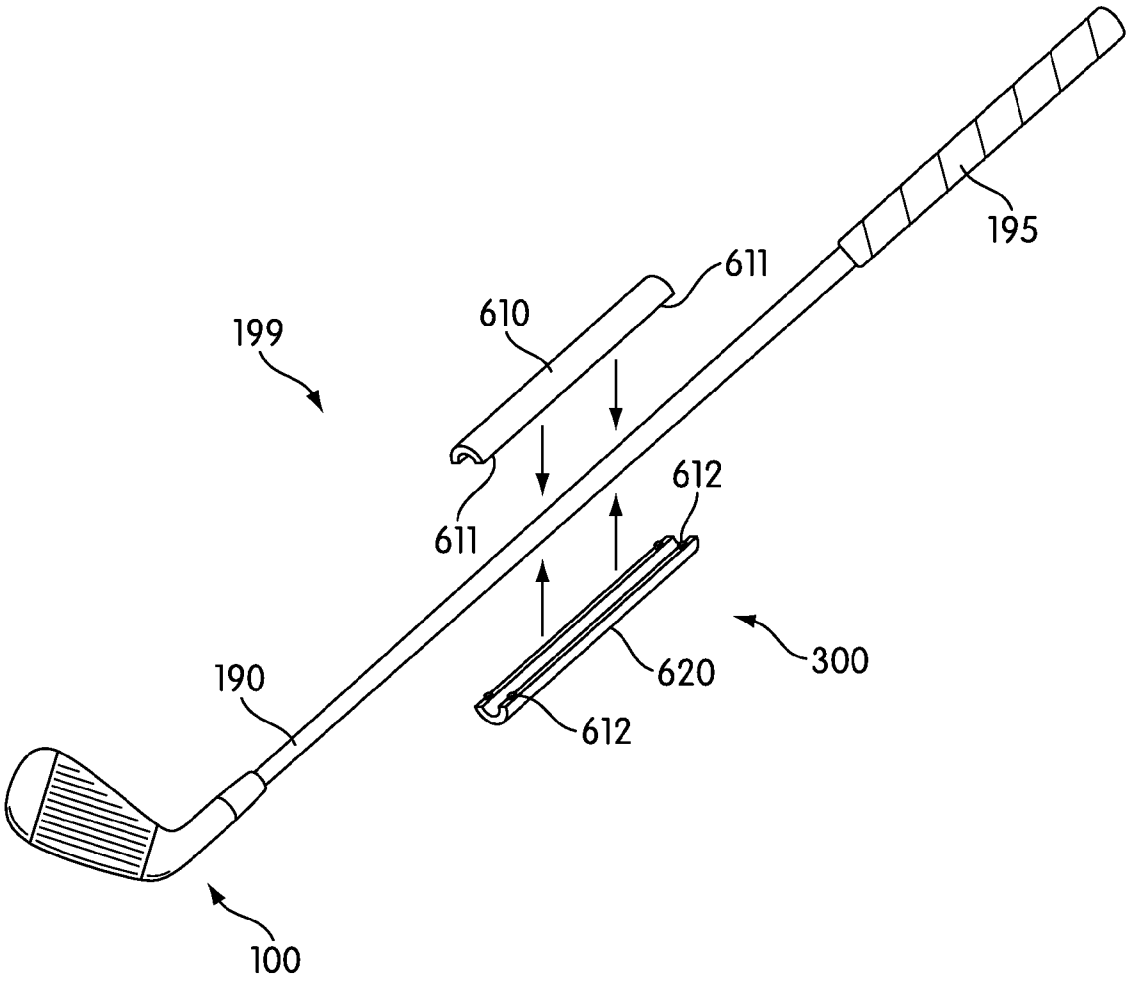
(57) **ABSTRACT**

A golf club shaft stiffening device with a flexible tubular body including an inner circumference and a length forming a tubular cavity is described. The inner circumference of the shaft stiffening device is sized and configured to circumscribe and constrictively engage an outer surface of a shaft and to cause the shaft to have an increased stiffness characteristic, allow the location of a kick point to be modified or modify other characteristics of the golf club. The shaft stiffening device may be housed on various sections of the shaft and may be slidably adjusted or positioned on the shaft. An associated method for fitting a golf club with a shaft stiffening device is also described. The shaft stiffening devices may be provided in a kit to facilitate fitting of a golf club with appropriate shaft stiffening devices.



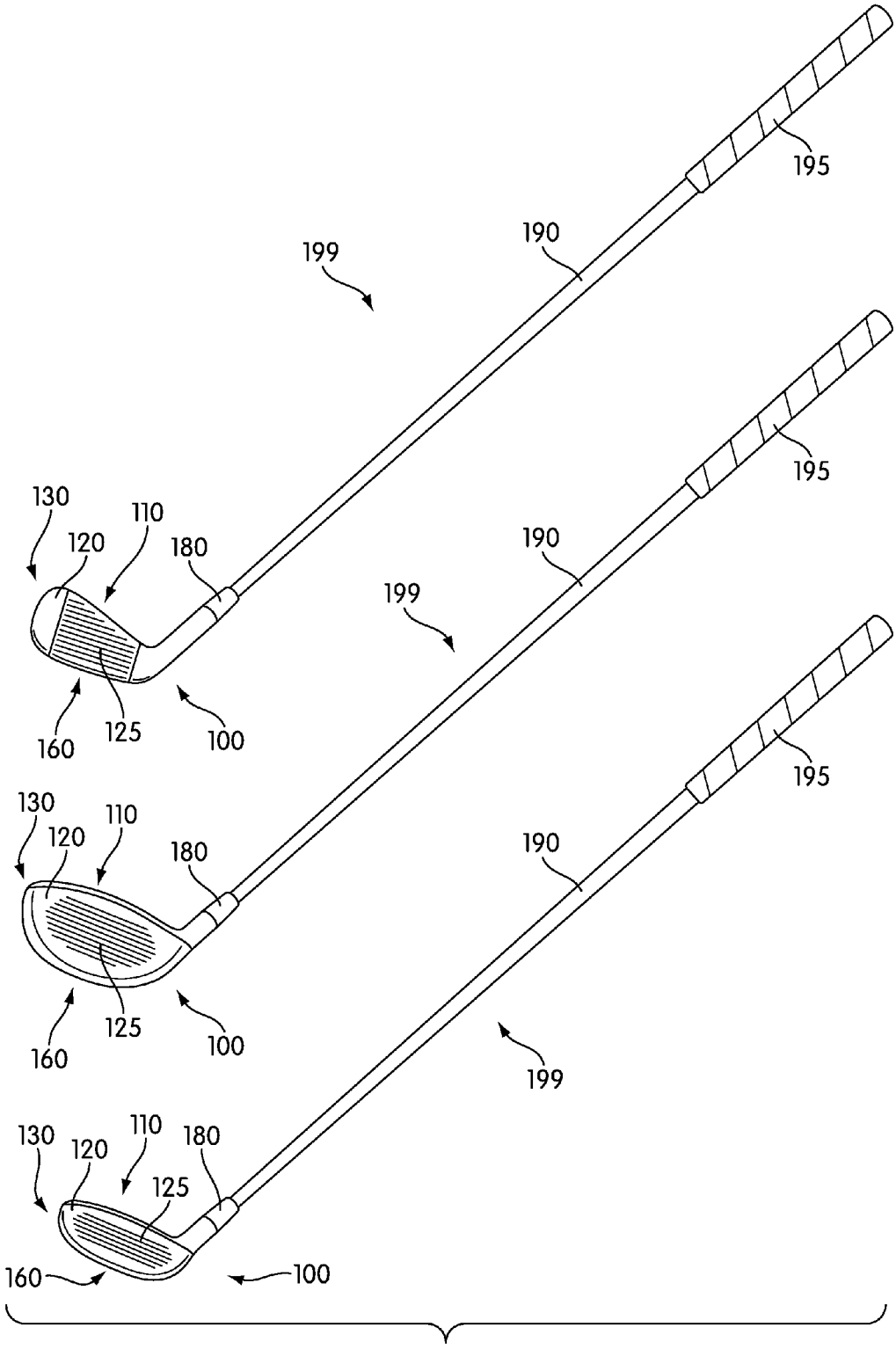

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FIG. 1A

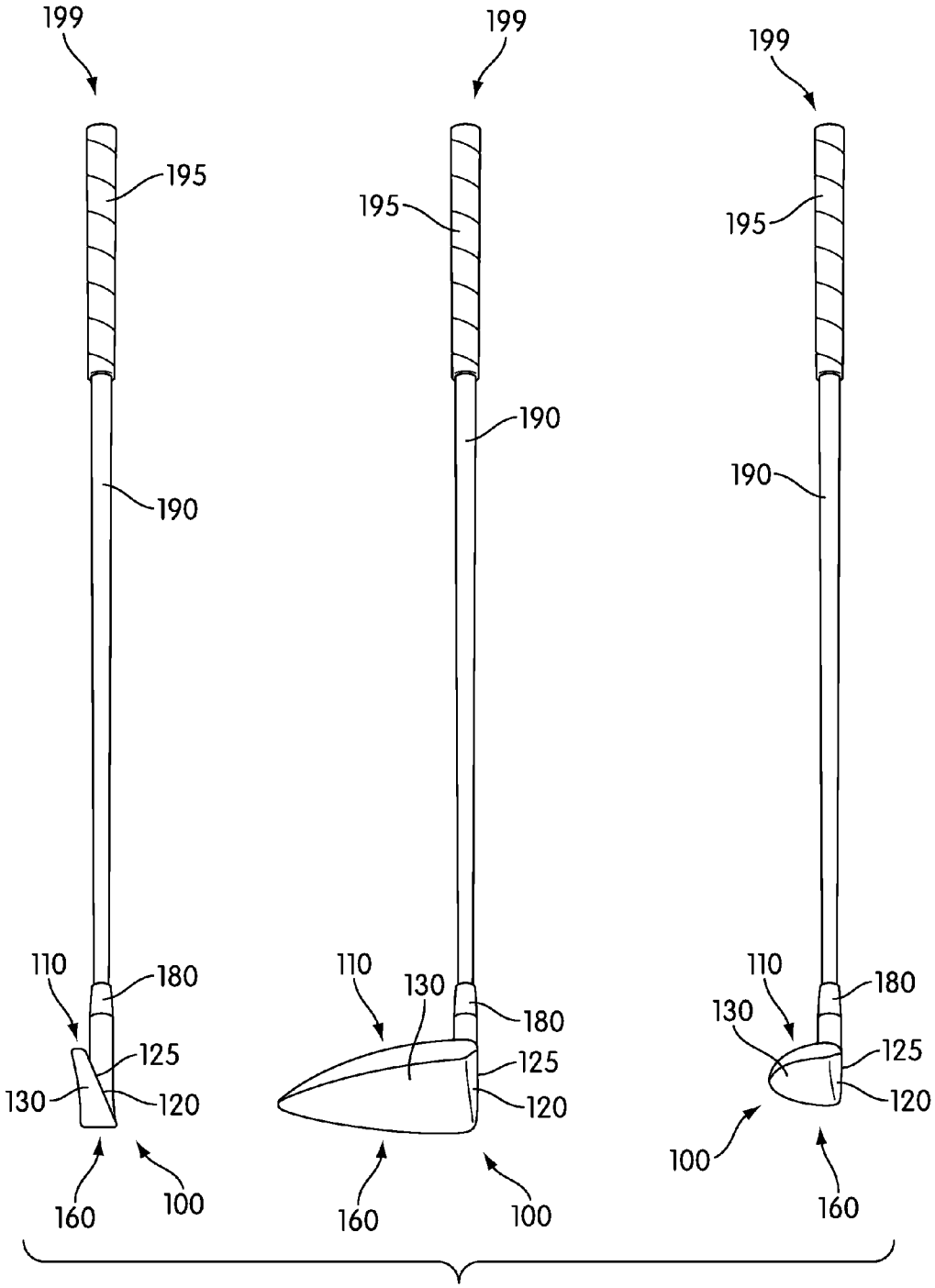
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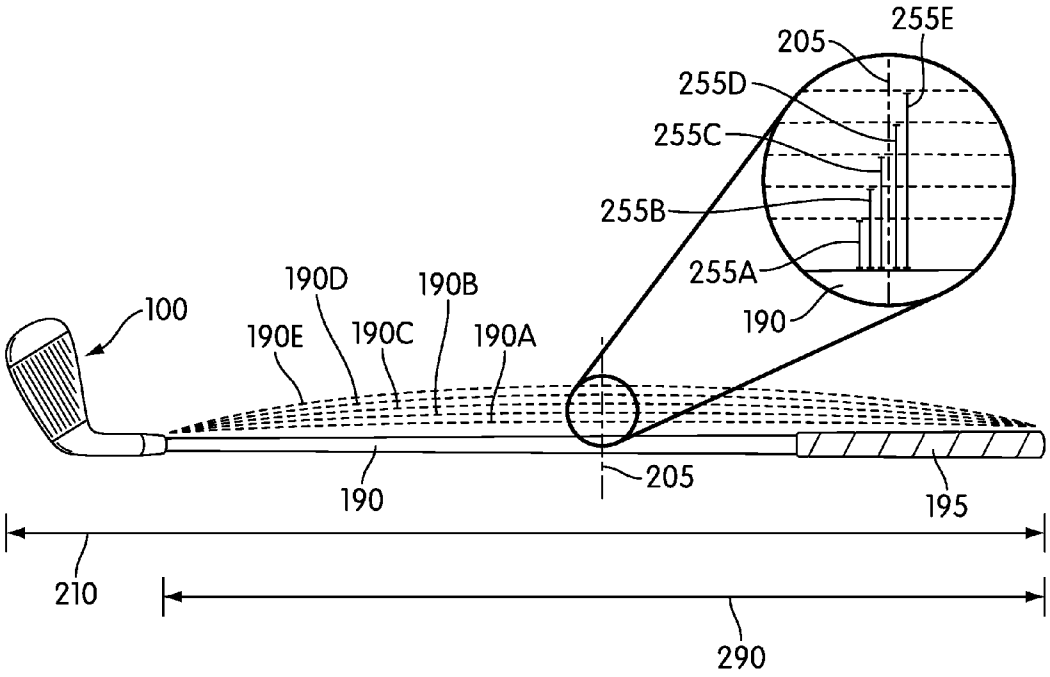
FIG. 1B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205
255D
255C
255B
255A
190
100
190D
190B
190E
190C
190A
205
190
195
210
290

FIG. 2A

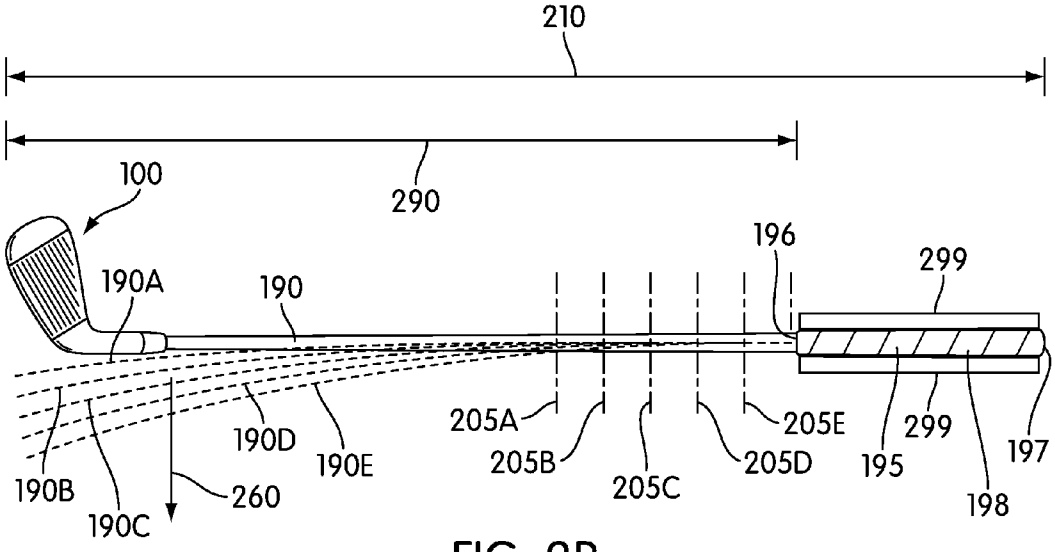
210
290
100
196
299
190A
190
205A
205E
190D
190E
205B
205C
205D
195
299
197
198
190B
190C
260

FIG. 2B

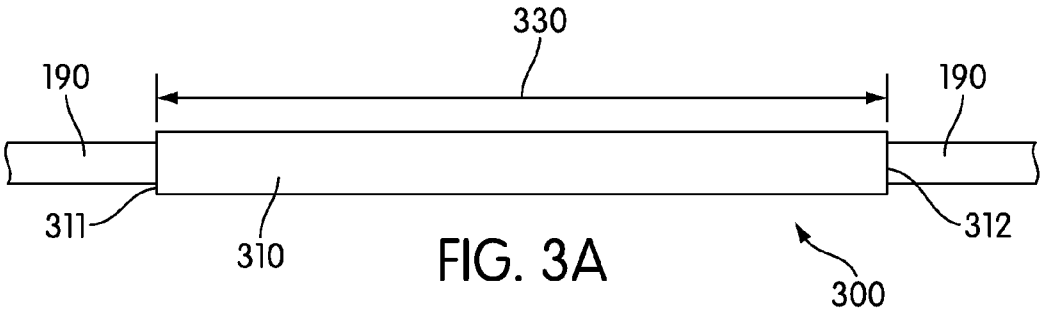

FIG. 3A

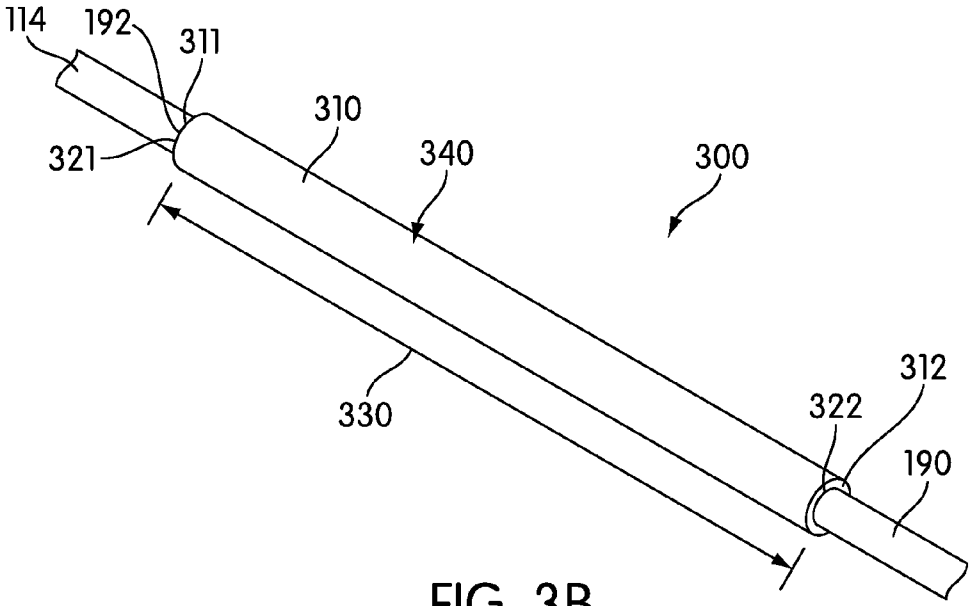

FIG. 3B

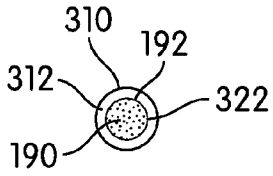

FIG. 3C

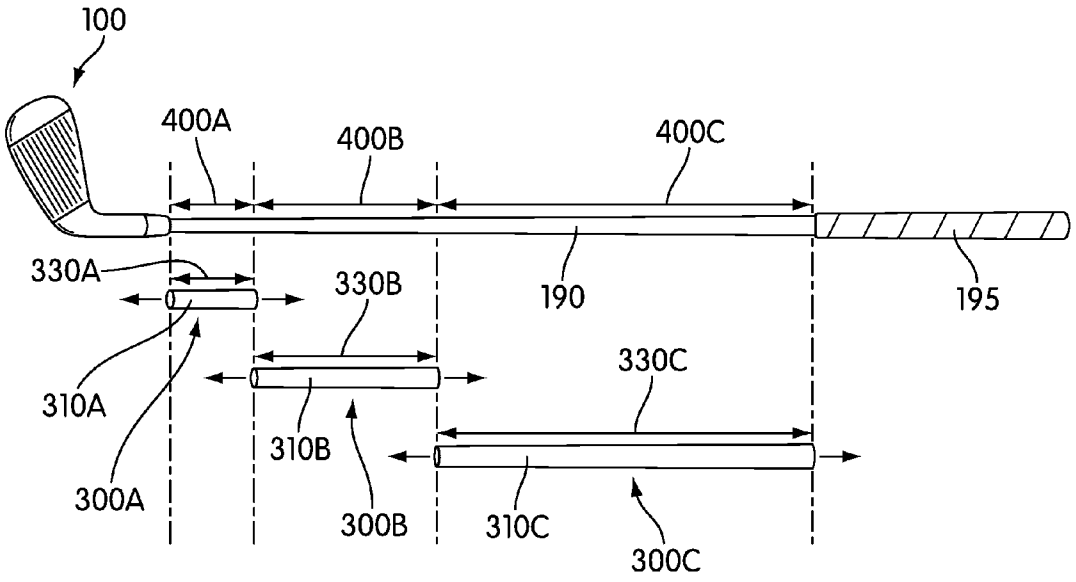
100
400A
400B
400C
330A
330B
190
195
330C
310A
310B
300A
300B
310C
300C

FIG. 4

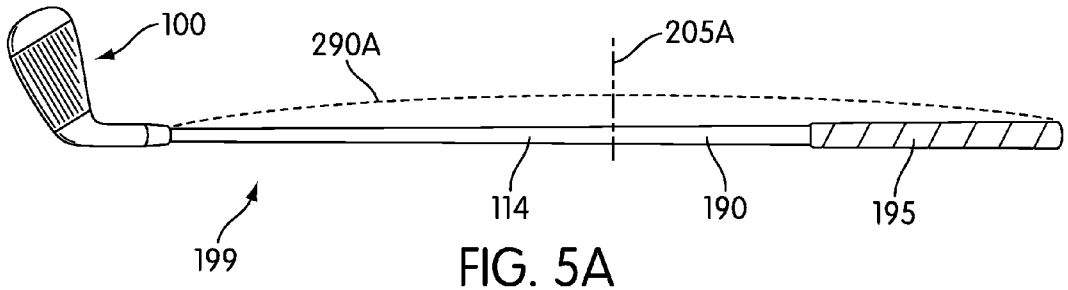

FIG. 5A

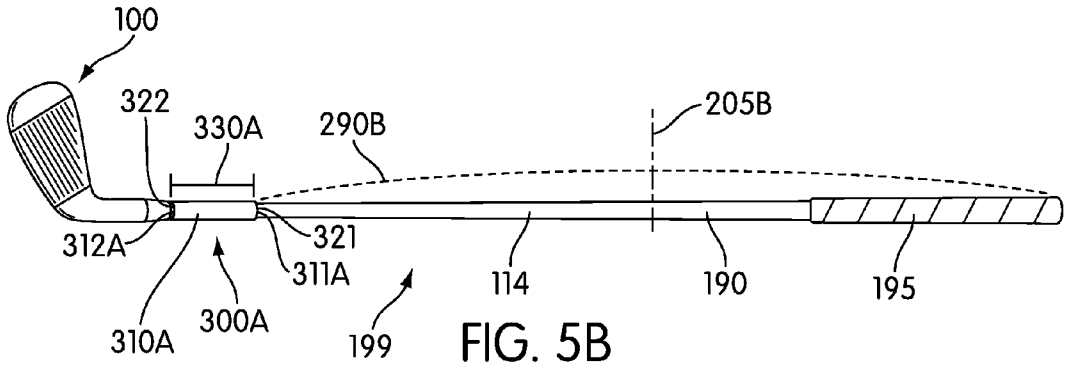

FIG. 5B

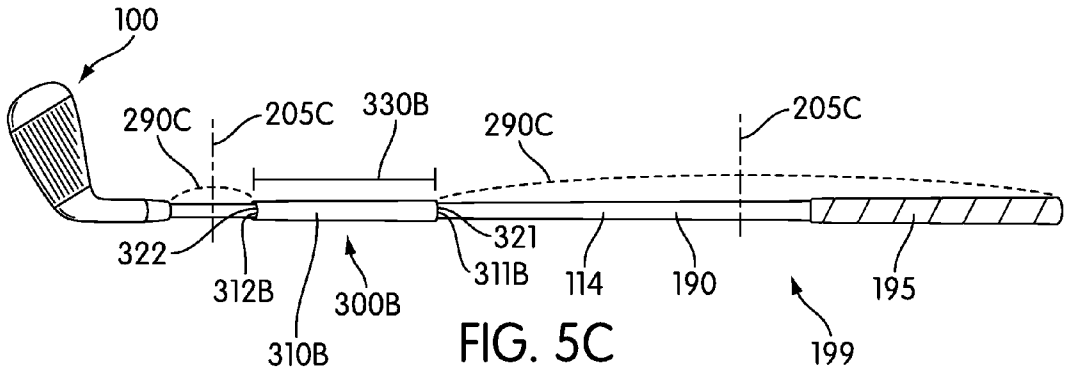

FIG. 5C

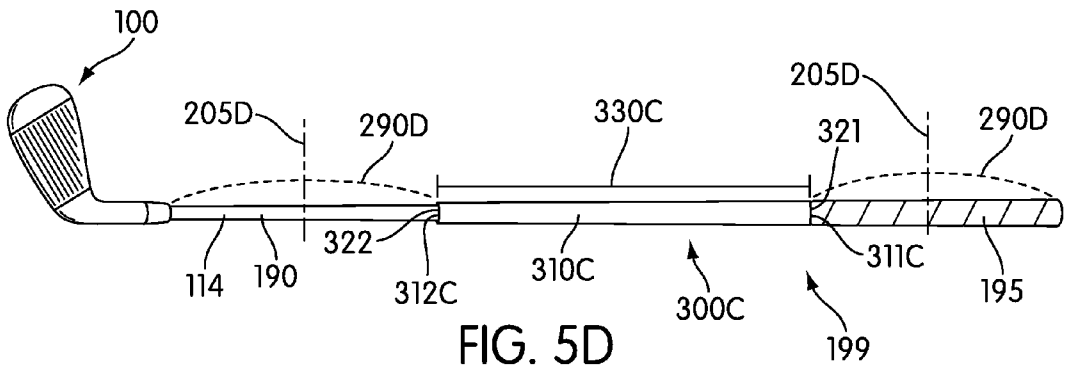

FIG. 5D

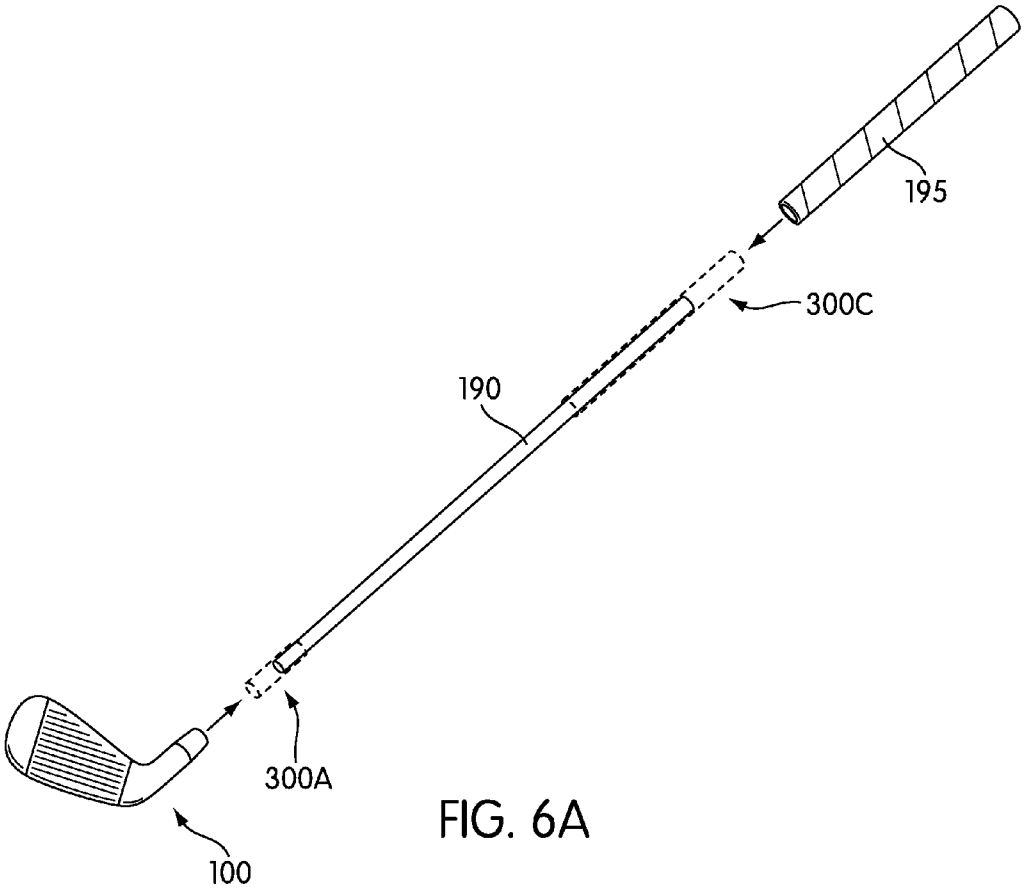

FIG. 6A

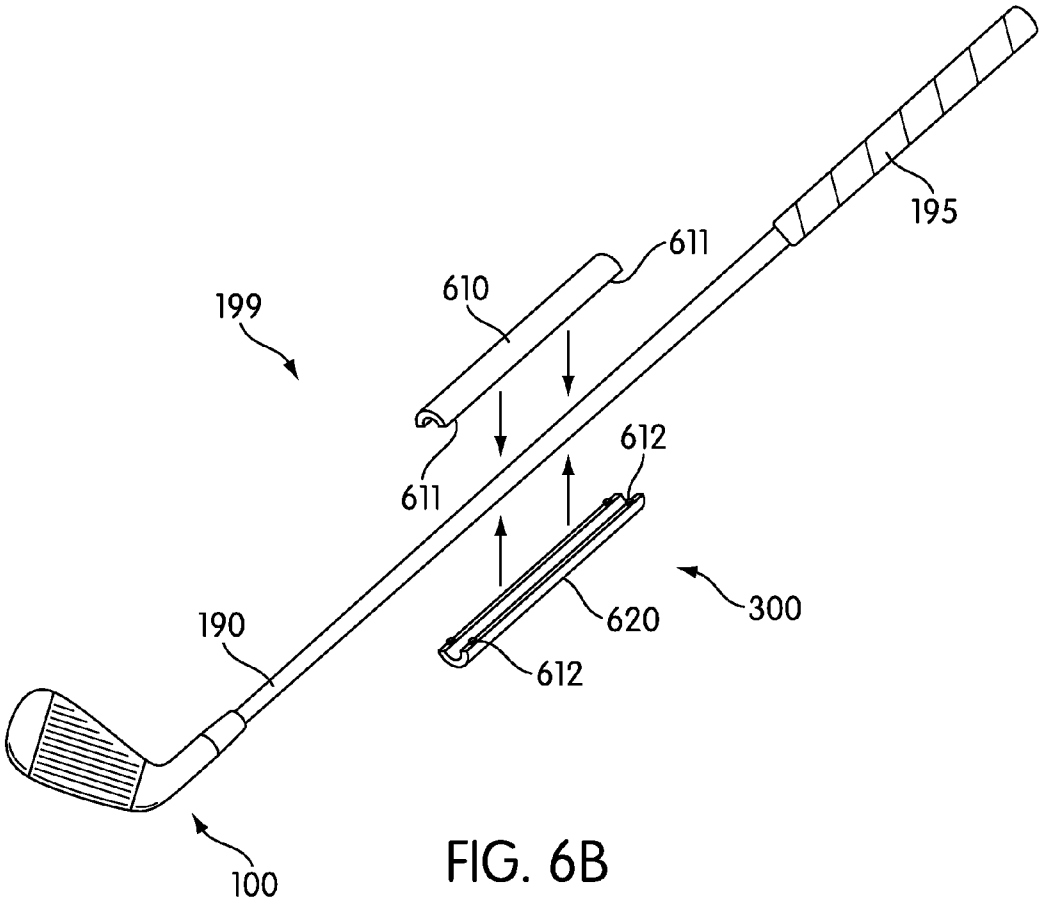

FIG. 6B

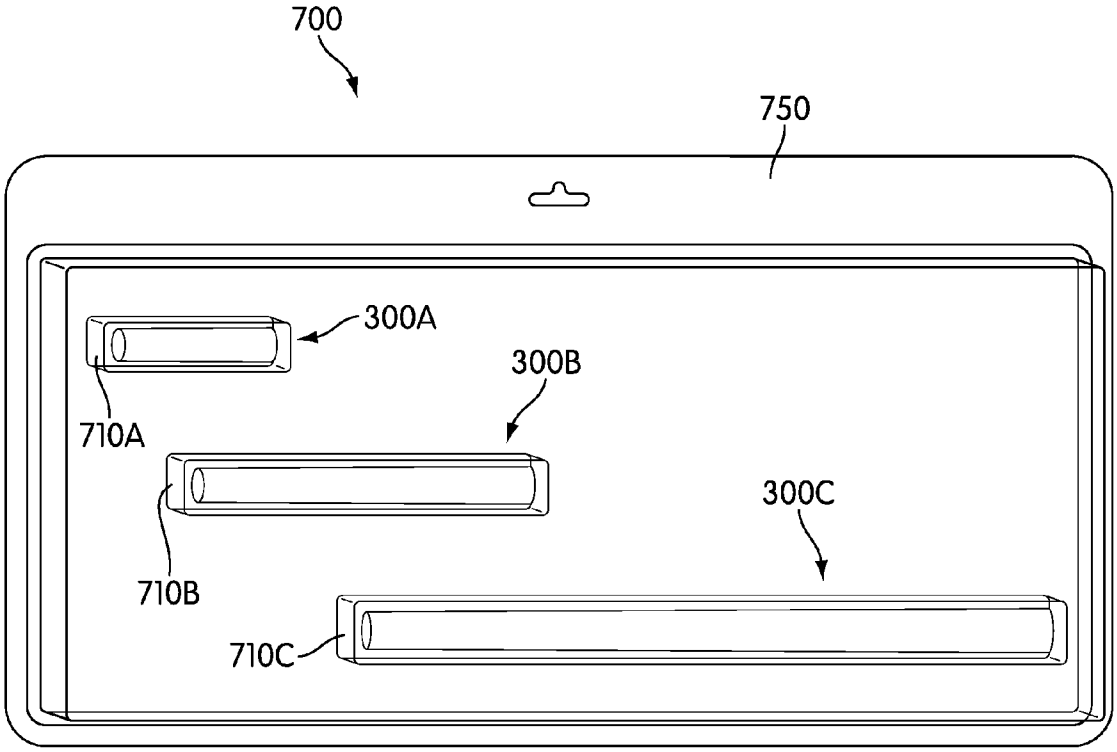

FIG. 7

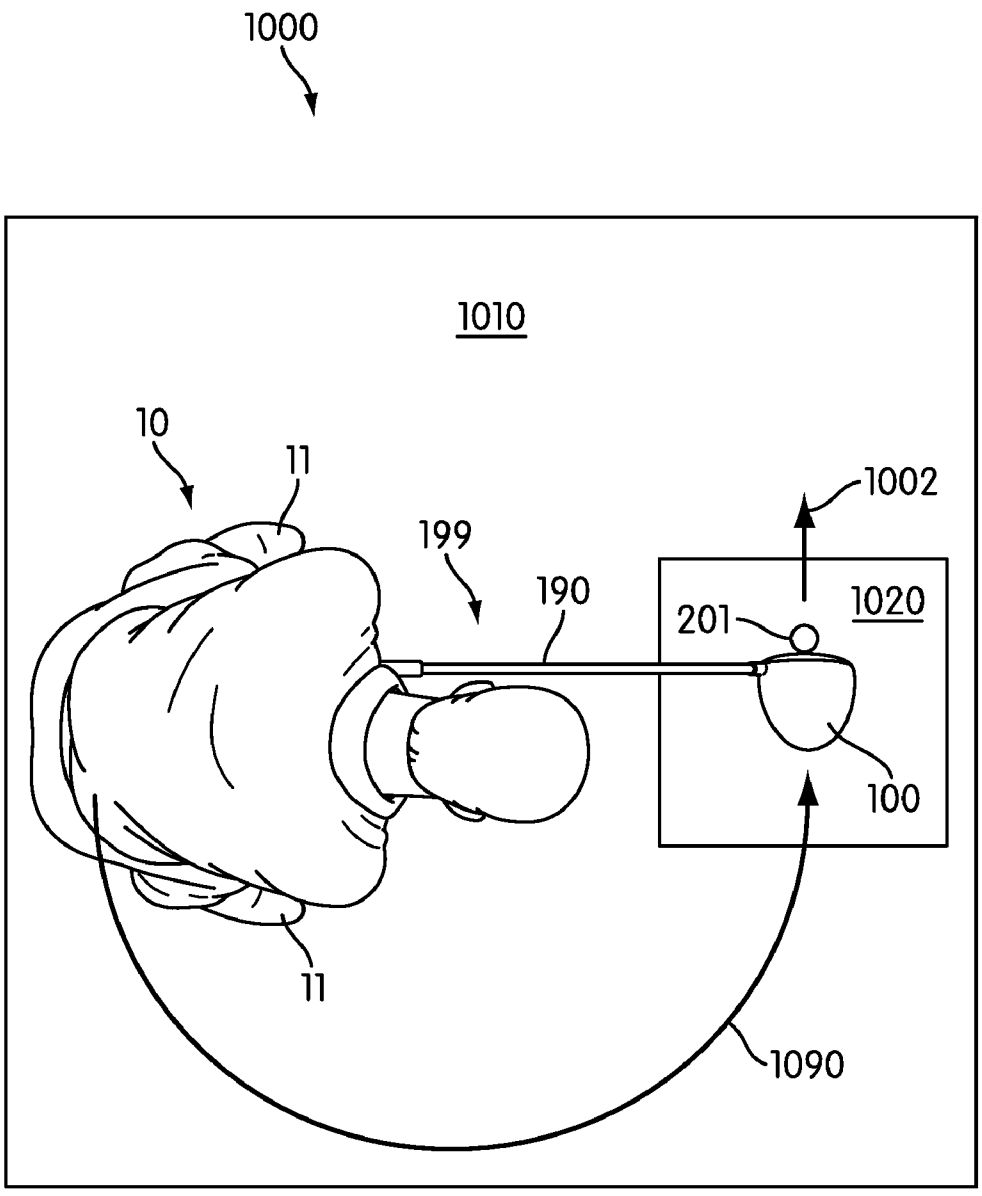

FIG. 8A

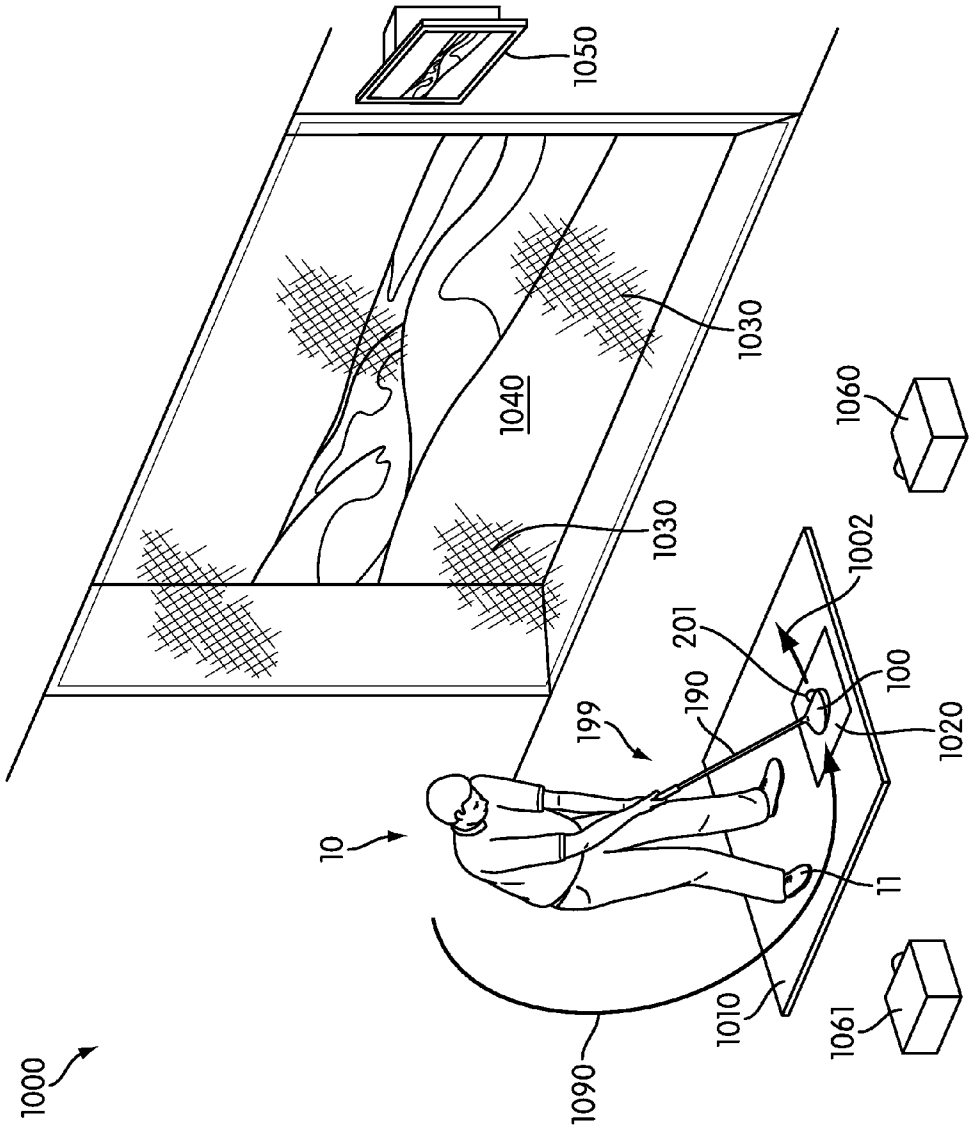
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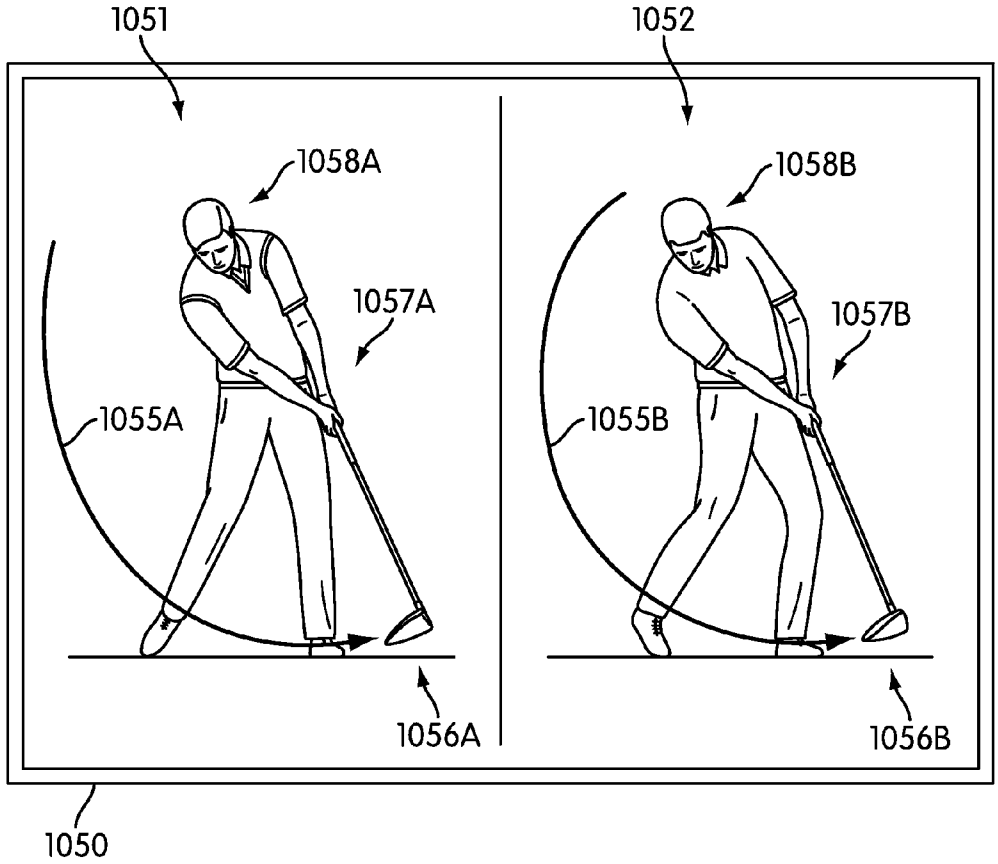
FIG. 8B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1058B
1057A
1057B
1055A
1055B
1056A
1056B
1050

FIG. 8C

SHAFT STIFFENING DEVICE

FIELD OF THE INVENTION

[0001] The present invention relates to a golf club accessory device, an associated golf club with the accessory device, and a method of fitting a golf club with the device. More particularly, the invention relates to a shaft stiffening device, a golf club with the shaft stiffening device and an associated method of fitting a golf club with the shaft stiffening device.

BACKGROUND

[0002] The swing of a golfer including the backswing and the downswing of a golfer is often related to the golfer's performance on the golf course. Golfers that can consistently swing a golf club in preferred manners may hit the golf ball farther, straighter and more consistently. Accuracy, control and direction may be improved when a golfer's swing has certain attributes associated with preferred swing directions, club orientations and swing motion paths. However, many golfers have difficulty swinging golf clubs according to certain preferred swing directions, club orientations and motion paths. Golfers also sometimes struggle to strike the golf ball with a golf club head in a preferred position, orientation and direction. Likewise, golf club head speed also affects the ball flight path and the distance and direction the golf ball will travel after being struck by the golf club head. Golfers vary physically in ergonomic dimensioning, strength, and other characteristics and also exhibit a wide array of variance in swing characteristics including swing speeds etc. Golf club components and golf clubs as a whole may exhibit varied characteristics based upon the characteristics of the individual components such as the shaft, the club head, and the grip. The shaft is a significant structure in performing a golf swing and may have an affect on a golfer's swing including positioning, orientation and speed of the golf club and golf club head at various points during the swing. The shaft affects performance for the club and preferred golf club performance including preferred and improved component characteristics is desirable, especially for components such as the shaft.

SUMMARY

[0003] Inventive aspects pertain to a golf club shaft stiffening device. The shaft stiffening device may be a flexible tubular body that includes an inner circumference and a length forming a tubular cavity. The inner circumference is sized and configured to circumscribe and constrictively engage an outer surface of a shaft and to cause the shaft to have an increased stiffness characteristic. The shaft may be removable. The tubular body may also be a unibody member in certain arrangements. The shaft stiffening device may be slidably adjustable on the shaft.

[0004] In another aspect, inventive aspects pertain to a golf club with a golf club head, a shaft coupled to the golf club head and housing a grip, and a shaft stiffening device slidably housed on an outer surface of a shaft such that the shaft stiffening device is external to the shaft. The shaft stiffening device may be sized, shaped and otherwise configured to constrictively engage a specific region of the shaft.

[0005] In another aspect, a method of fitting a shaft of a golf club with a shaft stiffening device is described. The method may involve determining a stiffness characteristic of a shaft of a golf club, determining a desired stiffness characteristic of a shaft based upon a swing of the golf club using a measuring device, and selecting a particular shaft stiffening device from among a plurality of available shaft stiffening devices. The selected shaft stiffening device may be placed on the shaft so it constrictively engages an outer surface of the shaft over a given region of the shaft.

[0006] In another aspect, a kit with a series of shaft stiffening devices is described. The shaft stiffening devices may have varied characteristics so as to fit varied portions of the shaft and/or varied characteristics to cause the shaft to exhibit certain characteristics when one or more of the shaft stiffening devices are constrictively engaged with the shaft.

DESCRIPTION OF THE DRAWINGS

[0007] The foregoing Summary, as well as the following Detailed Description, will be better understood when read in conjunction with the accompanying drawings.

[0008] FIGS. **1**A-**1**B are schematic front and toe end views respectively of various arrangements of golf clubs.

[0009] FIGS. **2**A-**2**B are illustrative diagrams depicting characteristics, including shaft characteristics of a golf club.

[0010] FIGS. **3**A-**3**C depict side, perspective and end views of an illustrative arrangement of a shaft stiffening device.

[0011] FIG. **4** is an illustrative diagram of other arrangements of several shaft stiffening devices.

[0012] FIGS. **5**A-**5**D are diagrams depicting illustrative effects of various shaft stiffening device, on a golf club.

[0013] FIG. **6**A-**6**B are illustrative views of application of the shaft stiffening device to a golf club.

[0014] FIG. **7** is an illustrative schematic diagram of one arrangement of a kit of shaft stiffening device(s).

[0015] FIGS. **8**A-**8**C illustratively depict aspects of a method of fitting a golf club and associated devices.

DETAILED DESCRIPTION

[0016] In the following description of the various embodiments, reference is made to the accompanying drawings that depict illustrative arrangements in which the invention may be practiced. It is understood that other embodiments may be utilized and modifications may be made without departing from the scope of the present invention.

[0017] FIGS. **1**A-**1**B are schematic front and toe end views respectively of three arrangements of a golf club **199**. The three arrangements may be commonly referred to as an "iron," a "driver" and a "hybrid" golf club **199**. This terminology is known by those skilled in the art. The driver and the hybrid golf clubs **199**, while having distinctions between them including size of the golf club head, shape and loft, among other potential illustrative potential distinctions, both may be classified more generally as "wood-type" golf clubs with wood-type golf club heads. Fairway woods, rescue clubs, numerically referenced woods, such as 3-wood, 5-wood, 7-wood and other terminology also refer to golf clubs that may characterized as "wood-type" golf clubs. The iron **199** may generally be described as an "iron-type" golf club with iron-type golf club heads. Long, medium and short irons (or numerical irons such as 3-iron, 7-iron, 9-iron etc.) may be considered iron-type golf clubs. Also, various wedges such as loft wedges, sand wedges, pitching wedges and gap wedges may also be considered "iron-type" golf clubs. Putters and other types of golf clubs also exist and are known in the art.

10, but the shaft **190** lags a bit. However, the shaft lag results in energy being stored in the shaft **190** in the form of a bend in the shaft. Now, as the golfer continues the downswing, the shaft **190** will continue to bend further to the extent its physical stiffness characteristics permit it to bend further. At a certain point the shaft **190** will reach its maximum bend based upon its stiffness compared to the speed of the golfer's swing and then the shaft **190** will begin to release its stored energy and begin to straighten out. In certain instances it may be preferred for the shaft **190** to reach its maximum bend as a golfer's left elbow begins to straighten out (assuming a right handed golfer). As mentioned above, at this point, the shaft **190** will begin to straighten out thereby causing the golf club head **100** to increase in velocity. As is recognized, increased club head velocity at the time the club head **100** impacts the golf ball will directly result in the golf ball having an increased initial velocity which will causes the ball to generally travel farther, as is often desirable in the game of golf. In order to maximize or optimize the velocity of the golf club head **100** at the time of impact of the hitting surface **125**, the shaft **190** can be configured or chosen so that it will finish straightening out simultaneous with impact of the golf club head **100** with the golf ball. Generally, the golf club head **100** will be moving at a maximum velocity of the swing simultaneous with the shaft **190** straightening as all of the energy stored as potential energy in the bend is released. However, if the golf club head **100** (and shaft **190**) continues to travel for a certain distance/time after the shaft straightens out before the golf club head **100** impacts the golf ball, energy will be lost as energy begins to be stored by the shaft **190** bending again but in the opposite direction as during the initial downswing. Accordingly, it is desirable for the shaft to consistently straighten as the golf club head **100** impacts the golf ball.

[0024] Thus a golfer may desire to have a golf club **199** with a shaft **190** that will straighten out at the moment of impact to optimize the force that their swing is generating and accordingly will maximize the distance the golf ball travels. Accordingly, the golf club head **100** will be moving as fast as possible for the given golfer's swing etc. Therefore, a shaft **190** will often be chosen to accomplish the optimized timing and straightening out of the shaft **190** as described depending on the golfer's swing characteristics. For example, if a golfer has a very fast swing but has a golf club with a supple shaft, the golfer's shots will not travel as far as they possibly could be travelling if the golfer was optimizing his swing energy because the shaft **190** has absorbed energy in the form of a bend in the shaft **190** and will not have fully released what it previously stored at the moment of impact and golf club head **100** velocity at impact will not have been maximized. Swing energy will have been wasted and the resulting shot will not achieve maximum travel distance. On the other hand, if a golfer has a slow swing but selects a very shift staff, a similar shot inefficiency and failure to maximize swing energy will result but for the opposite reason. In this instance the shaft will straighten out while the golfer is still in the downswing and the golf club head will travel ahead of the shaft such that the shaft is now bent forward. Again, the bent shaft at impact equates to wasted swing energy and a slower golf club head **100** velocity at impact. Again, the golf ball's travel distance after impact will not be maximized. As such, it is desirable for a golfer to have a golf club **199** that includes a shaft with complimentary stiffness characteristics to the golfer's swing to maximize the golfer's swing and swing energy and optimize the golfer's shots. Premature or tardy straightening of the club shaft **190** may also cause the directional aspects of the golf shot to be significantly altered as the orientation and travel path that the golf club head **100** takes as it travels through the hitting zone and contacts the golf ball can be varied. Accordingly, the golf ball may not be struck in a sweet spot of the hitting surface. Also, the golf ball may take an initial direction path askew from the desired path of travel. Spin may also be placed on the ball so as to inadvertently cause the golf ball to travel with a "hook" or "slice" path of travel. Further, the struck golf ball may not travel with an initial desired ball flight angle relative to the ground such that the ball is "popped up" or skulled and hit so as to skim the ground rather than travel with an elevated loft through the air such that the vast majority of the ball's travel distance occurs while the ball is traveling in the air rather than during rolling, bouncing or skimming the surface of the ground.

[0025] Another characteristic that may be considered when selecting a golf shaft **190** for a golf club **199** is the bend point or kick point **205**. The bend point or the kick point **205** is the location over the length of the golf club **199** where the club is defined, configured and/or arranged to bend. Various shaft models may be designed to have a kick point **205** at various respective locations along their length. In some instances a shaft **190** may be generalized as having a low, mid or high kick point **205**. The kick point **205** of a shaft **190** will often affect the orientation of the golf club head **100** when the golf club head **100** strikes the golf ball **201**. Accordingly, the location of the kick point may vary shot tendencies. Accordingly, a golfer may choose a golf club with a kick point **205** in a particular location to complement his or her swing tendencies, swing speed and golf skill. Generally speaking, a shaft **190** with a high kick point **205** (near the grip **195** end of the golf club—e.g. **205**B in FIG. **5**B) will produce lower launching and lower spinning golf shots. Often more skilled lower handicap golfers will desire these characteristics as the more skilled golfers desire to maximize distance and accuracy on their golf shots. These golfers typically are consistently able to hit the ball in the air and do not have trouble making solid contact with the ball. Rather, these golfers tend to desire improved distance and accuracy to allow them to more accurately "place" their golf shots and to maximize the power and distance of their swings. In contrast, a low kick point **205** (e.g. **205**D in FIG. **5**D) may be especially desirable to less proficient and high handicap golfers as these golfers may have a tendency to have difficulty striking the golf ball and may struggle to "get the ball in the air." Accordingly, a golf club shaft **190** with a low kick point **205** near the club head end of the golf club **100** will typically produce higher launching, higher spinning golf shots. As is known, high launching (or popped up) golf shots may result in the golf shot not maximizing distance of the golf shot. Also, increased spin may result in less accuracy of the golf shot and the ball may travel left or right of the desired travel path (respectively being hooked or sliced for a right handed golfer). However, these less proficient/high handicap golfers may struggle in getting the ball "up in the air" especially with certain clubs with less loft including high or long irons or certain woods including drivers, 3-woods etc. Because a shot in which a golfer does not get the ball "up in the air" may be a "duff" or a wasted shot, the less proficient golfer will often desire to sacrifice some distance by having a higher ball flight in exchange for a reduced frequency of waste or duffed shots in which the golfer does not solidly strike the ball or fails to launch the ball with sufficient trajectory to get the ball to travel in the air a

significant distance. A golfer falling between these two ranges of skills may accordingly desire a mid kick point **205** (e.g. **205**A in FIG. **5**A) that falls in the middle of the golf club and exhibits blended or average tendencies of the mid and low kick point shafts. While generally golfers may select shafts **190** with kick points **205** at locations based upon the above described criteria, golfers may also rely on "feel" or personal preferences to select shafts **190** with characteristics in a manner counter to that described above. For example, a less proficient high handicap golfer may select a shaft with a high kick point **205**B while a highly proficient golfer may select a shaft with a low kick point **205**D despite the above tendencies and generalizations.

[0026] Since each golfer's swing may be varied, golfers will have varied preferences regarding the shaft **190**. In at least one categorization system, shafts may be categorized by stiffness as Extra Stiff (X), Stiff (S), Regular (R), Senior (A) and Ladies (L) depending on the particular flex characteristics. However, no uniform industry standard exists with respect to stiffness of the shaft and a shaft categorized as "Stiff" by one shaft manufacturer will in certain instances possess the same or similar stiffness characteristics as a "Regular" shaft by another shaft manufacturer. Regardless, generally speaking, golfers generally may select a shaft based upon the distance they may typically hit a golf ball with a given club. For example, golfers and golf professionals may look to the distance that a golfer hits a drive with a driver as a guide in selecting a shaft stiffness. If a golfer hits a driver further than 250 yards they may desired a Stiff shaft; 230-250 yards—Regular shaft; 200-230 yards—Senior shaft; less than 200 yards—Ladies shaft. Extra Shift shafts are typically not used except for professionals, extremely low handicap, or extremely strong and fast swinging golfers. Again, these characterizations are merely illustrative generalizations and each golfer may desire a given golf club with a given shaft that exhibits preferred characteristics including shaft stiffness, length **290**, kick point **205** location and various other traits as desired.

[0027] The golf club **199** typically includes a shaft **190** coupled to the head **100** at the hosel **180**. A grip **195**, at which a golfer holds or grips the golf club, is attached to the shaft **190** at the end opposite the head **100**. Grips **195** are known and may vary significantly depending on preferences, ergonomic characteristics, and tendencies of the golfer, such as a tendency to hit slice or fade. For example, grips vary in "grip size" and in circumference. They also vary in particular texture and grip pattern on the outer surface of the grip. Grips can be round or may have a line or rib on the underside to assist the golfer in placement of his hands. Other shapes are also contemplated. Grips may be composed of a number of materials including rubbers, polymers, and leather, to name a few. The grip traits may be varied by, for example, making the grip corded or selecting any of various materials based upon the frictional properties of that material.

[0028] FIGS. **2**A-**2**B are illustrative diagrams of golf club **199** demonstrating varied shaft stiffness and kick points **205**A-E of a golf club. FIG. **2**A illustrates the flex characteristics of a golf club configured with 5 different stiffness characteristics consistent with the principles discussed above. As such, the golf club **199** and in particular the shaft **190**A-E may exhibit a state of maximum flex as shown and will be orientated with each arrangement of the golf club **199** to have a respective maximum flex **255**A-E associated with the five respective shafts **190**A-E of varied stiffness. For example, the shafts **190**A-E may illustratively be shown in the state of maximum flex may be illustrative described as Extra Stiff Shaft **190**A, Stiff Shaft **190**B, Regular Shaft **190**C, Senior Shaft **190**D, and Ladies Shaft **190**E. These designations are again illustrative and for ease of understanding and clarity, however, they may vary greatly. For example, in another arrangement the same five shafts **190**A-E illustrated in maximum flex state may all be characterized or labeled as "Regular" shafts and may have varied specific stiffness characteristics despite all being characterized as "Regular" shafts. Shaft **190**A may be characterized as the stiffest shaft, shaft **190**E as the least stiff and shafts **190**B-D falling in line accordingly in between shafts **190**A and **190**E with respect to stiffness. Also shown in FIG. **2**A is a flex length **290** which is equivalent in this arrangement the length **210** of the golf club and/or shaft which may be flexed when force is applied to the golf club **199**. Also, the golf club **199** and each of the five arrangement of the golf club **199** with varied shafts **190**A-E are shown as having the same kick point **205** where the shaft bends as shown. While these shafts **190**A-E have a common kick point **205**, varied locations of kick points **205** between shafts **190**A-E with varied stiffness is contemplated and will be described in further detail later.

[0029] FIG. **2**B further illustrates the effects of a golf club shaft for a given golf club **199** having a varied stiffness. FIG. **2**B illustratively depicts golf club **199** clamped at the grip end **195** of the golf club **199**. The clamp **299** (drawn for illustrative purposes as a golfer's grip) securely holds the grip **195** and the portion of the shaft **190** housed within the grip in a rigid fixed position. As such the region of the shaft housing the grip **195** and held in the clamp does not exhibit flex or bending when a force in the form of a weight **260** hung from the opposing club head **100** end is applied. The golf club **199** is again shown with a series of 5 shafts **190**A-**190**E shown in a flexed stated as a result of the force in the form of weight **260** being applied as described. Here, because the grip end **195** of the golf club is clamped and does not exhibit flex or bending, the flex length **290** and the actual length of the shaft are different. As such, the flex length **290** of the golf club **199** illustratively shown in FIG. **2**B is the length **290** running from one end of the grip **195** to the opposite end of the shaft **190** at the golf club head **100**.

[0030] Variances in the behavior of the golf club **199** between arrangements of varied shafts **190**A-E with varied stiffness are shown. Again, shaft **190**A is the stiffest shaft while shaft **190**E is least stiff with the other shafts shown falling accordingly and respectively in line. As is apparent from FIG. **2**B, the stiffer the shaft **190** is the less deflection or bending the shaft **190** exhibits when a given force **160** is applied at a given location. Further, the illustrative diagram of FIG. **2**B illustrates that the location of a kick point **205** may be varied as well between shafts **190** including especially including shafts **190**A-E with varied stiffness. Here, shaft **190**A has the lowest kick point **205**A, shaft **190**E has the highest kick point **205**E, and shafts **190**B-D have associated kick points **205**B-D falling in between. In this instance the variance in particular location of kick point **205** location is minimal as compared to the respective lengths of the flex length **290** and length **210** of the golf club **190**. A given golf club shaft **190**A-E may be made with a certain given stiffness characteristic and kick point **205**A-E. However, it may be preferred for the stiffness of the shaft **190** to be varied, or the location of the kick point **205** be varied. Further, it may be desirable to vary the stiffness of only a portion of the shaft **190** while

maintaining the original stiffness of the remainder of the shaft **190**. For example, by stiffening a portion of the shaft **190** but allowing the remainder of the shaft to continue to exhibit the original stiffness characteristic, more customized stiffness, kick point and related characteristics may be achieved as desired. For example, overall stiffness may be varied, and/or the locale of the kick point **205** may be transitioned. Specifically, the kick point **205** may be shifted either further up the shaft **190** towards the grip **195** such that the kick point **205** is higher and the golf club **199** has a tendency to provide higher launching trajectory/ball flight when the golf club **199** is used or further down the shaft **190** such that the golf club **199** will has a tendency to provide a lower launching trajectory/ball flight. By varying the stiffness of the shaft **190** in certain regions, the kick point may be resultantly shifted as well as the flex length **290** of the shaft **190** may be varied thereby causing the location at which bend occurs to be varied.

[0031] FIGS. **3**A-**3**C depict side, perspective and end views of one illustrative arrangement of a shaft stiffening device **300** housed on a cut-away portion of a shaft **190** of a golf club **199**. This configuration of shaft stiffening device **300** shown in FIGS. **3**A-**3**C includes an elongated tubular body **310** with two hollow opposing ends **311**, **312**. The shaft stiffening device has a length **330** running from one end **311** to the other end **312**. The opposing ends **311**, **312** have respective inner circumferences **321**, **322**. The shaft stiffening device is hollow radially inward between the inner circumferences **321**, **322**. As such, the shaft stiffening device **300** houses a hollow cylindrical channel running (not shown as it is filled by the shaft **190** in FIGS. **3**A-C) between opposing ends **311** and **312**. The channel is configured to house and constrictively engage a shaft **190** of a golf club **199**. As such, the shaft stiffening device **300** is fit snugly around the shaft **190** while not being so snug on the shaft so as to prevent the shaft stiffening device **300** from being slidably adjustable and maneuverable on the shaft **190** of the golf club **199**. The shaft stiffening device **300** may be adjusted to a specific desired position on the shaft **190**. The opposing ends **311**, **312** may have inner circumferences **321**, **322** of the same size or the inner circumferences may be varied in size to further compliment a tapered shape including common shapes such as a continuously tapering rounded shape of a shaft **190** of a golf club **199**.

[0032] The shaft stiffening device **300** may be formed of a variety of materials including various plastics, rubbers, elastomers and various other materials known. To allow the shaft to be applied to the golf club shaft **190** the shaft stiffening device **300** may be formed of flexible material that when applied over the top of another surface of the shaft **190**, the shaft **190** in that region exhibits increased stiffness. For example, in one illustrative example the shaft stiffening device may be composed of longitudinal tape formed to have increased stiffness in the longitudinal direction running up and down the shaft **190**. In another illustrative example, the shaft stiffening device may be a polymer or plastic. Numerous other materials and combinations of materials may be used in the shaft stiffening device consistent with that described herein. Should the staff stiffening device **300** be applied over the grip **195**, the material will need to be flexible to allow the device **300** to expand over the grip **195** and still constrictively engage shaft **190**. As will be described in more detail in relation to FIG. **6**, the shaft stiffening device may be placed over the shaft prior to complete assembly of the golf club **199** including prior to attachment of the golf club head **100**, the grip **195** or both. In arrangements in which the shaft stiffening device is placed over an exterior surface of a shaft **190** prior to complete assembly of the golf club **199**, more rigid and less elastic materials may be utilized than might be possible should the shaft stiffening device need to be slid over a grip or other portion of the golf club head having a larger circumference (perimeter) than the shaft **190** (e.g. grip **195**). Change or replacement of grips **195** of a golf club is a common practice. As such, removal of a grip **195** to apply the shaft stiffening device **300** is known to be a simple practice such that even in configurations in which the shaft stiffening device **300** is configured (including being composed of sufficiently elastic materials) such that the shaft stiffening device may be stretched and pulled over an obstructing portion of the golf club **199**, it may be desirable to remove the grip **195** of the golf club. However, as described certain configurations of the shaft stiffening device **300** are configured such that they may applied to an assembled golf club **199** after market with out disassembling any portions of the golf club **199**. As such, when a golfer learns after purchase and/or use of a golf club **199** that different shaft characteristics may be more complimentary to his/her swing, the shaft stiffening device **300** may be applied and the shaft characteristics potentially including increased overall shaft stiffness, increased stiffness of portions of the shaft or shifting of the kick point **205** of the golf club **199**.

[0033] The shaft stiffening device **300** may constrictively engage the outer surface of the shaft **190** as the inner circumference **321**, **322** of the shaft stiffening device **300** in a non-engaged state will be smaller than the outer surface of the shaft **190**. When the shaft stiffening device is pulled over the outer surface of the shaft **190** the structural integrity of the shaft as a solid steel or graphite material will retain its shape and size. As such the shaft stiffening device **300**, to the extent its material properties are such that permit a certain amount of expansion and "stretch" in the radially outward direction, including the inner circumference running between and including inner circumferences **321**, **322** will be expanded thereby stretching a portion of the shaft stiffening device **300**. The shaft stiffening device will be placed under expansion stress force and will exert an opposite force upon the outer surface of the shaft **190** as the integrity of the material of the shaft stiffening device **300** resists deformation. These opposite forces cause the shaft stiffening device **300** to constrictively engage the shaft **190**. The shaft stiffening device **300** is configured such that it will be able to withstand the forces applied during a golfer's swing and will remain in the specific location it has been placed. In short, the force up and down the club shaft **190** during a swing are not greater than a resistive frictional engagement force as a result of the shaft stiffening device **300** being constrictively engaged with the outer surface of shaft **190**. However, the shaft stiffening device **300** is also configured such that if a golfer **10** or other user applies a sufficient direct force to an end **311**, **312** and/or the outer surface **340** of the shaft stiffening device **300**, the shaft stiffening device **300** will slide a certain distance in one or both directions on the shaft **190**. In certain configurations the shaft stiffening device **300** may be slid across the entire length of the golf club shaft **190** or at least between the hosel **180** and the bottom of the grip **195**. In other configurations, a shaft stiffening device **300** may be more specifically configured such that it may be adjusted within a certain region (e.g. **400**A-C) of the shaft, however, it will not be slidable to any

location on the shaft, just adjustable within one of a low **400**A, mid **400**B, or high **400**C section of the shaft **190**. (See FIGS. **4** & **5**A-**5**D).

[0034] FIG. **4** is an illustrative diagram of several arrangements of a shaft stiffening device **300**. For reference, the shaft of a golf club **199** may have a low section **400**A, mid section **400**B, and a high section **400**C. The low section **400**A as shown is the section of the shaft adjacent to the golf club head **100** (and hosel **180** to the extent the particular arrangement of the golf club **199** includes a hosel). The low section **400**A is the portion of the shaft **190** that typically has the smallest circumference diameter especially when the shaft **190** is continuously tapered from the grip end **195** to the club head end **100** on the opposing end of the shaft **190**. The high section **400**C is the portion of the shaft **190** that is adjacent to the grip end **195** of the golf club **199** while the mid section **400**B is the section between the low section **400**A and high section **400**C. The shaft stiffening device **300** may be specifically configured and sized for one of the low section **400**A, mid section **400**B, or the high section **400**C. The specific sizing allows the shaft stiffening device **300** to be more specifically tailored to each section **400**A-C including length and circumference. As shown, shaft stiffening devices **300**A, **300**B, and **300**C are respectively sized, shaped and formed to constrictively engage sections **400**A, **400**B, and **400**C respectively of the shaft **190**. In at least one arrangement, shaft stiffening devices have a length **330**A, **330**B, **330**C that is shorter than the length of section **400**A, **400**B, **400**C, respectively, of the shaft.

[0035] Since the shaft stiffening device **300**A, **300**B, **300**C is shorter than its corresponding section **400**A, **400**B, **400**C on the shaft **190**, the shaft stiffening device **300**A, **300**B, **300**C may be slidably adjusted with section **400**A, **400**B, **400**C so as to finely adjust the shaft stiffness altering affect of the shaft stiffening device **300** including the specific portion of the shaft **190** caused to be stiffened or a shifted location of the kick point **205** to occur.

[0036] FIGS. **5**A-**5**D are illustrative diagrams depicting an illustrative affect the shaft stiffening device **300**A-**300**C has on the golf club shaft and the flex, stiffness, and kick point attributes. FIG. **5**A illustratively depicts a golf club **199** without any shaft stiffening devices **300**A-C. Also, in FIG. **5**A the golf club **199** has a flex length of **290**A shown as extending from the golf club head **100** to the grip **195**. Similar to how the portion of the shaft **190** with the grip **195** did not demonstrate bend or flex in FIG. **2**B, the grip **195** also will generally remain straight and rigid. Also, similar to how the grip **195** was clamped in place and thus did not bend, the golfer will grip the golf club on the grip **195** and the golfer's hands will act as a securing force (like the clamp) preventing the shaft from bending at the grip **195**. It should be understood and recognized that golfers may grip the shaft at varied positions on the grip **195** and thus the flex length **290** may actually include portions of the lower end of the grip **195**, however, for illustration and explanation purposes FIGS. **5**A-**5**D assume the grip **195** is held rigid by outside forces such as by a golfer's hands down the entire length of the grip **195**.

[0037] FIGS. **5**B-**5**D illustratively show the golf club **199** with a shaft stiffening device **300**A-**300**C housed on the low **400**A, mid **400**B, and high **400**C sections of the shaft **190**. FIGS. **5**B-**5**D also demonstrate the effect shaft stiffening devices **300**A-**300**C have on various golf club **199** characteristics including flex length **290**B-**290**D and the location of the kick point **205**B-**205**D. FIG. **5**B illustratively shows the golf club **199** with shaft stiffening device **300**A housed on the low section **400**A of the shaft **190** adjacent to the golf club head end **100**. The shaft stiffening device is constrictively engaged about the exterior of the shaft **190**. The stiffening device **300**A may be composed of a number of materials as described previously including rubbers, polymers, plastics and other materials. The shaft stiffening device **300**A constrictively engaging the low section **400**A of the shaft causes the region portion of the shaft radially inward of the shaft stiffening device to exhibit an increased stiffness characteristic down the length **330**A between the ends **311**A, **312**A of the shaft stiffening device **300**A. Here, the stiffness characteristics have been altered such that the shaft **190** is rigid in the low section **400**A of the shaft of the golf club **199**. Accordingly, the portion of the shaft that exhibits flex or bending can be changed as can the associated flex length **290**B. Additionally, the kick point **205**B is shifted upward further towards the high section **400**C and the grip **195** of the golf club. FIG. **5**C illustratively shows the golf club **199** with shaft stiffening device **300**B housed on the mid section **400**B of the shaft **190** of the golf club head **100**. Similarly, the shaft stiffening device **300**B is depicted through its constrictive engagement as causing the mid section **400**B to exhibit increased stiffness characteristics and in particular fairly rigid characteristics. Accordingly, the shaft **190** now has two flex length regions **205**C. Additionally, the shaft in the configuration of FIG. **5**C also has a pair of kick points **205**C on opposite sides of the shaft stiffening device. Lastly, FIG. **5**D illustratively shows the golf club **199** with shaft stiffening device **300**C housed on the high section **400**C of the shaft **190**. The high section **400**C of the golf club shaft is shown as having an increased stiffness trait as the shaft in this region is illustrated as being held generally rigid by the shaft stiffening device **300**C. Accordingly, flex lengths **290**D extend down near golf club head **100** end of the golf club head **100** and at the grip **195** respectively. Also, the kick points **205**D have varied locations.

[0038] As shown and described, the shaft stiffening device **300**A-**300**C can be formed in various flexible yet constrictively engaging structures that compress down on the shaft in a particular region. As such, the shaft **190** can be further supported and the shaft in that particular region will exhibit increased stiffness characteristics. The extent to which the stiffness characteristics are varied will depend on various characteristics potentially including the original shaft stiffness, the length of the shaft stiffening device **330**A-**330**C, the material composition of the shaft stiffening device **300**A-**300**C, the snugness of the constrictive engagement by the shaft stiffening device **300**A-**300**C, swing characteristics of the golfer **10** and other specific characteristics. Also as shown, the shaft stiffening device **300** may be further formed to engage the shaft **190** so as to modify the shaft characteristics as desired without altering other features of the golf club **199**. For example, to provide a continuous and smooth feel to the golfer, when a shaft stiffening device **300**C is specifically configured for the high section **400**C of the shaft, the shaft stiffening device **300**C may be formed in one arrangement such that end **312** abuts the lower end **196** of the grip **195** such that an outer surface of the grip **198** is flush with the shaft stiffening device **300**C. As such, the shaft stiffening device **300**C when positioned as shown provides the feel of a single elongated grip **195** rather than a distinct structure near the top of the shaft **190**. As such, improved feel characteristics may be accomplished while still accomplishing the shaft characteristic altering function as desired.

[0039] While the regions of the shaft **190** within the shaft stiffening device(s) **300** are shown as exhibiting no flex for illustrative purposes in the diagrams of FIGS. **5**A-**5**C, the shaft **190** in these regions may exhibit reduced flex rather than no flex in various configurations. As such, the shaft characteristics including shaft stiffness characteristics may be accomplished consistent with that described herein as the "reduced flex" regions will have similar effects as "no flex" regions on the characteristics and functionality of the shaft, perhaps with just variances in degrees and extent of certain characteristics. Likewise, while the region of the shaft **190** within the grip **195** is shown as having a flex region in FIGS. **5**A-**5**D, this region will likely have a reduced flex characteristic (or no flex) as a result of the golfer gripping this region with his hands when swinging the club in the configurations of FIGS. **5**A-**5**D as the golfer's hands may act as a clamp consistent with that shown in FIG. **2**B.

[0040] FIG. **6**A illustratively depicts one arrangement for placing a shaft stiffening device **300** on a shaft **190** of a golf club **199**. In this arrangement of the golf club is shown as three sections, the golf club head **100**, the grip **195**, and the shaft **190**. These three sections are coupled together to form the golf club **199**. Application of the shaft stiffening device **300** is more easily performed prior to the golf club **199** being constructed. As shown in FIG. **6**A, if the golf club **199** has not yet been completely constructed such that one or both the grip **195** and/or the golf club head **100** has not been attached to the remainder of the golf club **199**, the shaft stiffening device **300** may be pulled onto the shaft **190** and slid to the desired position. In certain arrangements it may only be possible to apply the shaft stiffening device **300** from only one of the ends as the tolerances may be sufficiently tight such that the shaft stiffening device could not be slid up the length of the shaft as the wider diameter of the shaft encountered during the slide would cause the shaft stiffening device **300** to become stuck. In the arrangement of FIG. **6**A, the shaft stiffening device **300** is applied to the shaft and positioned in the desired location. Next, the golf club head **100** and the grip **195** will be accordingly coupled to the shaft **190** using securing processes and adhesion techniques and adhesives as are known in the art. Alternatively, as described previously, certain configurations of shaft stiffening devices may be applied in retro fit to a fully constructed golf club **199**. Typically in such a retrofit situation, if the golf club **199** is not going to be disassembled to any extent the shaft stiffening device will be applied over the grip **195** and slid further down shaft **195**. Alternatively, as shown in FIG. **6**B the shaft stiffening device **300** may be formed such that the shaft stiffening device **300** is an arrangement of two split halves **610**, **620** in one configuration the halves may be equivalent in size and shape such as true halves or they may be varied in size and shape. The halves **610**, **620** whether similar shaped in size or varied can be fit together such that the halves **610**, **620** form a shaft stiffening sleeve that wraps around the shaft **190** and snaps, is pressure fit, or is otherwise held together once constrictively engaged with the shaft **190**. Among the mechanisms that may be utilized are snap fits, compression fits, bonding, adhesives and various other techniques for holding two structures and/or two materials together. FIG. **6**B illustrates a snap fit in which a metal connector(s) **611** is housed on half **610** and thereby engages and connects to half **620** which has complimentary female connector(s) **612**. While shown and described as halves, it is understood that a shaft stiffening device **300** may be composed of three, four or more structures of the same or varied shapes and sizes so as to form a structure for constrictively engaging the shaft **190** consistent with that described herein. These illustrative connections shown are merely illustrative and many other specific connection arrangements and configurations are contemplated.

[0041] FIG. **7** is an illustrative schematic diagram of one arrangement of a kit **700** of shaft stiffening device(s). Here the kit **700** includes a series of shaft stiffening devices **300**A, **300**B, and **300**C. Each of the shaft stiffening devices **300**A, **300**B, **300**C is specifically formed for a specific portion of the shaft **190**. Here, shaft stiffening device **300**A is sized and shaped to specifically fit the low section **400**A of the shaft, shaft stiffening device **300**B is sized and shaped to specifically fit the mid section **400**B of the shaft, and shaft stiffening device **300**C is sized and shaped to specifically fit the high section **400**C of the shaft. Because of the specific characteristics of the shaft, the shaft stiffening device **300**A-**300**C vary in cross-section and length with shaft stiffening device **300**A being the shortest and having the smallest cross-section while shaft stiffening device **300**C is the longest and has the largest cross-section. In this particular configuration, kit **700** includes a housing **750** configured to house three shaft stiffening devices **300**A, **300**B, **300**C in visible holders **710**A, **710**B, **710**C. The kit **700** and housing **750** in particular can be hung on a shelf or otherwise viewed, displayed and suspended for viewing, selection and/or purchasing. The kit **700** may be utilized akin to a club testing cart such that the a plurality of shaft stiffening devices **300** may be housed in the kit and golfers, golf professionals, and potential purchasers may view and select shaft stiffening devices from a series of shaft stiffening devices available for testing. For example, a unibody shaft stiffening device **300** such as the shaft stiffening device **300** shown in FIGS. **3**A-**3**B and the a multiple component shaft stiffening device **300** such as the one shown in FIG. **6**B as well as other various configurations of shaft stiffening devices **300** may be housed in a kit **700** such that the golfer may select a shaft stiffening device with the features most desirable to the golfer and most beneficial to the golfer's swing. Using the depicted kit **700** or other like kits consistent with that described herein, a golfer, golf professional or other users or distributers of golf equipment can fit a golfer with a particular shaft stiffening device **300**.

[0042] Golf professionals are known to work with golfers to assist them in improving their golf game including their swing and associated play by analyzing the golfer's tendencies, providing instruction and recommendation regarding modifications to their swing and also in recommending various equipment including selection of clubs. Further, a golf professional for a certain golf manufacturer may offer a selection of features for which the golfer may select either alone, or with the assistance of the golf professional. Among the features that vary from golf club to golf club are various shaft characteristics including length, stiffness, kick point, a grip type, feel and many others. Each golfer may have a swing tendency that varies from other golfers. Accordingly golfers may desire and benefit from an individualized fitting of a golf club before such that the golfer's swing characteristics and swing tendencies may be noted and accounted for. In a fitting process, a golfer may have his or her swing analyzed by a professional either visually or by using any of various measuring and analysis devices known in the art and will be described further below.

[0043] FIGS. **8**A-**8**C illustratively depict one manner of fitting a golf club **199** including a shaft **190**. As is known, a

golfer **10** may perform a number of swings in front of one or more golf professionals or golf club fitters. The movements including the golf swing may be viewed, recorded, and/or measured by a measuring device including a videographic device like a digital video camera. FIGS. **8**A and **8**B illustrate top plan and rear views respectively of a golfer swinging a golf club and hitting golf balls in an illustrative fitting station **1000**. The fitting station **1000** may have any of a number of arrangements and features. The fitting station **1000** shown in FIGS. **8**A-**8**C is an indoor fitting station. However, fitting stations **1000** may be indoor or outdoor and may be located at a driving range or other practice facilities, at a golf course including in or near a pro shop and various other locations as are known. The fitting station **1000** may include a hitting mat **1010**, especially when the fitting station is an indoor station or when the station is part of a driving range. Although, a fitting station may occur on a grass tee box or other outdoor natural golf environment. Here, the indoor fitting station **1000** also includes a net **1030** that a golfer **10** may hit the ball into in performing his or her shots, practice swings and swings in front of a golf professional or golf club fitter. The net **1030** permits the fitting to be done in a more limited space such as indoors, in a pro shop or in a driving range with limited land available. Behind the net **1030** may be a background **1040** or other structures that may make the golfer feel as if he is on the golf course. Also, while not specifically depicted, the background may house or protect a further measuring device(s) including velocity or force sensors, videographic devices and other devices that may be utilized in the fitting of the golfer.

[0044] The ball travel of a golfer's shot may be monitored by watching an entire ball flight at a fitting station on a driving range that possesses sufficient space for the ball to travel until it comes to a natural stopping point/lie. Also, a golfer may also hit in a confined spaced monitored by a digital video camera or other computing devices that can determine the travel path based upon initial characteristics of the shot including velocity, trajectory, spin etc. Further measuring devices may be used to further understand the swing path and related tendencies of a golfer. In one example configuration, a golfer's swing may be filmed using a digital video camera device **1060**. In particular the golfer's swing may be filmed from a toe end view such that the golfer has a stance square to and facing the camera. In another configuration, the golfer's swing my alternatively or additionally be filmed by a measuring device positioned at a position such as the position where measuring device **1061** is illustratively shown as being. By filming the golfer's swing from square orientations such as the rear and toe end, the video may be compared to images and swing paths performed and recorded by a golfer having preferred mechanics as is shown in FIG. **8**C.

[0045] Among the devices and tests that may be used to monitor the swing path, contact orientation and related characteristics of a golfer swing are video recording, radar tracking including Doppler radar technology, motion detection devices, speed radar devices, ball flight tracking devices and monitoring systems and similar golf swing analysis devices as are known in the art. These measuring devices may be positioned as illustrative measuring devices **1060**, **1061** are shown as being positioned. These devices may also be positioned in front of the golfer **10** such that the golfer is hitting at the measuring device or on the heel end side of the golfer behind the golfer's back. Even further, measuring devices may be placed overhead or practically anywhere such that the measuring devices can record data such as video images of the golfer's movements or track and record data or characteristics associated with the portions of the golf club or ball movement such as velocity, direction, orientation, and other characteristics as a re known. Other devices focused at determining the golf club's orientation during the swing and in particular the orientation of the golf club through the hitting zone when the golf club head strikes the golf ball may be utilized. These devices may be the same or similar devices as the videographic, radar or other motion tracking devices or the devices may be as simple as lie board devices which depict where a bottom surface of the golf club contacts the ground and the direction of movement and orientation of the club through the hitting zone. Also basic tape devices placed over the hitting surface **125** of a golf club head may be used to provide data regarding the portion of the hitting surface **125** where the golf ball is being hit to determine whether the ball is being hit in a sweet spot or off-center such that the swing or club may need adjustment to optimize results.

[0046] After a sufficient number of swings and "practice" or "sample" shots have been made to provide a desired sampling of shots to provide for a reliable fitting, the golf and/or fitting professionals can use the data collected to recommend a particular golf club head **100** housing a visual swing indicator **400** that will help the golfer performing a golf swing more regularly according to traditional preferred swing mechanics. Among the characteristics collected or measured may include swing path data, trajectory, orientation of the golf club on impact, ball spin, ball flight and physical dimensions and ergonomic characteristics of the golfer, to name just a few. The analysis of the swings including swing patterns can be used to determine a desired swing path, tendencies of the golfer's swing, and changes to the golfer's current swing path such that the specific changes required may be more visibly noticeable. The bend and flex characteristics may be determined and shown such that an analysis can be performed to determine whether a club shaft of a club is appropriate as maximizing the performance of a golfer with particular swing tendencies. For example, preferred stiffness, preferred location of kick point and effects of a shaft stiffening device located at certain locations.

[0047] FIG. **8**C illustrates a display **1050** depicting two respective swing characteristics outputs **1051**, **1052** illustratively depicting two swings of golfers in videographic form such as digital video. In one arrangement the displayed swing **1051** may be a videographic image of preferred swing of a professional golfer or other golfer including a "virtual golfer" with preferred swing mechanics. On the right, the golf swing **1052** may be an actual swing of a golfer **10** currently being analyzed in the fitting station **1000**. Through the split screen comparison on display **1050**, a golfer may be analyzed and fitted for a particular golf club features such as visual swing indicators, shaft characteristics, and alignment aides and other features to facilitate a golfer swinging in a preferred manner to achieve preferred performance. For example, backswing paths **1055**A, **1055**B of the golfers may be compared during the swings **1051**, **1052**. Likewise, the orientations of the golf club head **1056**A, **1056**B, the golfers' arm and hand positions **1057**A, **1057**B, and the head positions **1058**A, **1058**B may be compared visual. Other comparisons and analysis may be performed as is known. While the display **1050** here illustrates videographic information relating to the golfers' swings, the display **1050** may be utilized during other aspects of the analysis including output of various other characteristics utilized in fitting the golfer **10**. Further, as shown in

FIG. **8**B the display **1050** may also be used to enhance the fitting experience and may be visible to the golfer during the fitting process. However, various configurations of outputs can be used to perform a swing analysis and provide output data relating to the golfer's swing to the golfer or the golf professional.

[0048] Illustrative aspects of the present invention are disclosed above and in the accompanying drawings with reference to a variety of embodiments. The purpose served by disclosure of the embodiments, however, is to provide an example of the various aspects embodied in the invention, not to limit the scope of the invention. One skilled in the art will recognize that numerous variations and modifications may be made to the embodiments without departing from the scope of the present invention, as defined by the appended claims.

1. A golf club shaft stiffening device comprising:

a flexible tubular body including an inner circumference and a length forming a tubular cavity, wherein the inner circumference is sized and configured to circumscribe and constrictively engage an outer surface of a shaft and to cause the shaft to have an increased stiffness characteristic.

2. The golf club shaft stiffening device of claim **1**, wherein the shaft stiffening device is configured for removable engagement with the shaft.

3. The golf club shaft stiffening device of claim **1**, wherein the flexible tubular body is a unibody member.

4. The golf club shaft stiffening device of claim **1**, wherein the shaft stiffening device is configured to cause a flex point of the shaft to be varied when the shaft stiffening device is constrictively engaged at different points along the shaft.

5. The golf club shaft stiffening device of claim **1**, wherein the flexible tubular body is specifically configured and sized to constrictively fit and be slidably adjustable within one of a low section, a mid section, and a high section of the shaft.

6. The golf club shaft stiffening device of claim **1**, wherein the flexible tubular body is specifically configured and sized to constrictively fit and be slidably adjustable within a high section of the shaft and wherein the flexible tubular body is configured such that an outer surface of the flexible tubular body is flush with an outer surface of a grip when an end of the tubular body abuts an end of the grip.

7. The golf club shaft stiffening device of claim **1**, wherein the flexible tubular body comprises one of a rubber, a plastic and a polymer.

8. The golf club shaft stiffening device of claim **7** further comprising, an original shaft state and an engaged shaft stiffening device state in which a shaft stiffening device is constrictively engaged around a portion of the shaft, wherein the region of the shaft housed between two opposing ends of the shaft stiffening device has a higher stiffness in the engaged shaft stiffening device state than in the original shaft state.

9. A golf club comprising:

a golf club head;

a shaft coupled to the golf club head and housing a grip; and

a shaft stiffening device slidably housed on an outer surface of a shaft such that the shaft stiffening device is external to the shaft.

10. The golf club of claim **9**, wherein the shaft stiffening device includes a hollow tubular body with an inner circumference configured to constrictively engage the shaft across a length of the hollow tubular body.

11. The golf club of claim **10**, wherein an inner circumference of the shaft stiffening device continuously increases along the length from a first end of the hollow tubular body to a second opposing end of the hollow tubular body.

12. The golf club of claim **10**, wherein the hollow tubular body is sized and configured to constrictively engage one of a low section, a mid section, and a high section of the shaft, the length of the hollow tubular body being smaller than the length of the one of the low section, the mid section and the high section of the shaft.

13. A method of fitting a shaft of a golf club with a shaft stiffening device comprising the steps of:

determining a stiffness characteristic of a shaft of a golf club;

determining a desired stiffness characteristic of a shaft based upon a swing of the golf club using a measuring device; and

selecting a particular flexible tubular body shaft stiffening device from a plurality of available flexible tubular body shaft stiffening devices based upon the determined desired stiffness characteristic and applying the particular shaft stiffening device to the shaft by positioning the particular flexible tubular body shaft stiffening device on the shaft such that the inner circumference of the particular flexible tubular body shaft stiffening device constrictively engages an outer surface of the shaft.

14. The method of fitting a shaft of a golf club with a shaft stiffening device of claim **13**, further comprising the step of determining a desired flex point of the shaft.

15. The method of fitting a shaft of a golf club with a shaft stiffening device of claim **13**, further comprising the step of positioning the particular flexible tubular body shaft stiffening device at one of a low section, a mid section, and a high section of the shaft based upon the determination of the desired stiffness characteristic.

16. The method of fitting a shaft of a golf club with a shaft stiffening device of claim **14**, further comprising the step of positioning the particular flexible tubular body shaft stiffening device at one of a low section, a mid section, and a high section of the shaft based upon the determination of the desired flex point of the shaft.

17. The method of fitting a shaft of a golf club with a shaft stiffening device of claim **15**, further comprising the step of slidably adjusting the flexible tubular body shaft stiffening device within one of a low, mid, and high section of the shaft.

18. A kit providing a series of shaft stiffening devices comprising:

a first, a second and a third distinct shaft stiffening device, each of the first, the second and the third shaft stiffening devices including a hollow tubular body with an inner circumference, wherein the hollow tubular body and the inner circumference of the first, the second and the third shaft stiffening devices are respectively sized and configured for constrictive engagement of a low section, a mid section and a high section of a shaft of a golf club.

19. The kit providing a series of shaft stiffening devices of claim **18**, wherein the first shaft stiffening device is sized and configured to be slidably adjustable within the low section of the shaft of a golf club, the second shaft stiffening device is sized and configured to be slidably adjustable within the mid section of the shaft of a golf club, and the third shaft stiffening device is sized and configured to be slidably adjustable within the low section of the shaft of a golf club.

20. The kit providing a series of shaft stiffening devices of claim **19**, wherein each of the respective first, second and third shaft stiffening devices are composed of one of a rubber, a plastic and a polymer.

21. The kit providing a series of shaft stiffening devices of claim **19**, wherein each of the shaft stiffening devices is configured to increase a stiffness characteristic of the shaft of the golf club when in constrictive engagement with the golf club.

22. The kit providing a series of shaft stiffening devices of claim **19**, wherein each of the shaft stiffening devices is configured to provide a different flex point for the shaft of the golf club when in constrictive engagement with the golf club.

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