A double-tubed golf club shaft which is composed of a single piece outer tube and a single piece inner tube with multiple collar washers sandwiched therebetween to mitigate a vibrational shock power efficiently and thus provide precise strike and a comfortable swing for a player.
DOUBLE-TUBED GOLF CLUB SHAFT
BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a double-tubed golf club shaft that has an excellent anti-shock feature to enable a golfer to strike a ball precisely.

[0003] 2. Description of Related Art

[0004] Golf has been a popular game for decades and continuing efforts are made to improve the golf clubs so that players can improve their scores, etc. FIG. 6 shows a conventional shaft of a golf club, wherein the phantom lines indicate vibration of the shaft during a swing and impact against a ball (not shown). Such vibration is known to be injurious to players, especially those who play golf frequently.

[0005] An improved golf shaft, a sectional golf shaft, is shown in FIG. 8, wherein the shaft body (50) is composed of multiple sections (50a, 50b, 50c . . . ). Those sections are joined contiguously to make the whole shaft body as a substantially tapered stick, and each section can be made from different materials whereby permutations can achieve variations of flexibility.

[0006] This sectional golf shaft has an anti-vibration characteristic because of those different materials. Vibration shock from a club head is diminished quickly by going through different material in each section, and non-continuous joint portions between the sections also influence the shock to go upward. Therefore, when the shock reaches a grip mounted around a top end of the shaft, it is vastly reduced and thus does not generally injure the player. However, this sectional shaft has some disadvantages which are as follow:

[0007] 1. The manufacturing process is complex when compared with that of the single piece shaft because the shaft body (50) is constructed by joining multiple sections of different materials.

[0008] 2. Peripheral edges of the joint portion are easy to have stress ruptures after the club has been used for a period of time. Furthermore, this sectional shaft has so many joint portions which means that this shaft has great possibility to crack at the joint portions.

[0009] 3. The different materials from which the sections may possibly be made and those non-continuous joint portions distort upward path of the vibration shock, but this distortion situation also happens when a strike power from the golfer goes downward to the club head to hit a ball. Thus, the golfer has to waste some extra strength to send the ball to the same distance as achieved when using the conventional one-piece forged shaft.

[0010] To overcome the shortcomings, the present invention tends to provide a double-tubed golf club shaft to mitigate and obviate the aforementioned problems.

SUMMARY OF THE INVENTION

[0011] The main objective of the invention is to provide a double-tubed golf club shaft which mitigates a vibrational shock efficiently and makes a user have precise shot by using this invention.

[0012] Objects, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is a perspective view of a double-tubed golf club shaft with a grip and a club head in accordance with the present invention;

[0014] FIG. 2 is an exploded view of the double-tubed golf club shaft of FIG. 1;

[0015] FIG. 3 is a cross-section view of a portion of the double-tubed golf club shaft of FIG. 1, in combination;

[0016] FIG. 4 is a schematic view of the movement of an inner tube and an outer tube while the double-tubed golf club shaft is being swung;

[0017] FIG. 5 is a schematic view of a rebound movement of the inner tube and the outer tube while the double-tubed golf club shaft is being swung;

[0018] FIG. 6 is a schematic view of a vibration degree of a conventional golf shaft;

[0019] FIG. 7 is a schematic view of a vibration degree of the double-tubed golf club shaft;

[0020] FIG. 8 is a perspective view of a sectional golf club shaft.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

[0021] With reference to FIGS. 1 and 2, a double-tubed golf club shaft consists of an outer tube (10), an inner tube (20) and multiple collar washers (30).

[0022] The outer tube (10) and the inner tube (20) are each a one-piece body and made of a flexible and light material, such as graphite. A total weight of the outer tube (10) and the inner tube (20) is slightly higher than but still close to commonly average weight of 70-90 grams of conventional shafts.

[0023] It is noted that the multiple collar washers (30) are evenly-adhered on an outer-periphery of the inner tube (20). The quantity of the collar washers (30) is decided by how much weight the double-tubed golf club shaft is required to have, and the higher the quantity of collar washers (30), the greater the vibration damping characteristic of the golf club.

[0024] The outer tube (10) has an inner diameter slightly larger than an outer diameter of the inner tube (20). Therefore, when the inner tube (10) and the outer tube (20) are combined as shown in FIG. 3, the collar washers (30) are completely sandwiched between the outer tube (10) and the inner tube (20) to absorb the vibrational shock when the golf club hits a ball.

[0025] Now referring to FIG. 4, where power is transmitted down the shaft during a swing of a player, the outer tube (10) and the inner tube (20) both move in the same direction. However, as shown in FIG. 5, after the ball has been struck and the shaft rebounds due to impact vibration travelling back up the shaft, the outer tube (10) has already moved in an opposite direction but the inner tube (20) still moves in the original direction because of inertia power. Therefore,
the vibrational shock is efficiently decreased and any chance of subsequent injury is minimized. Comparisons of vibration of the double-tubed golf club shaft and the one-piece forged golf club shaft are shown in FIGS. 6 and 7. The double-tubed golf club shaft has smaller vibrational range than the conventionally one-piece forged golf club shaft because most of vibrational power is counteracted during oscillation, and this result also makes the user strike a ball accurately and smoothly.

[0026] Additionally, because this double-tubed golf club shaft does not involve multi-sectional shafts, it is not complex in production and does not cause striking power loss and breakage of the peripheral edge of the shaft as found in the sectional golf shaft described in the related art.

[0027] It is to be understood, however, that even though numerous advantages of the present invention have been set forth in the foregoing description and function of the invention, the disclosure is illustrative only. Changes may be made in detail within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:

1. A double-tubed golf club shaft comprising:
   an outer tube;
   an inner tube received inside the outer tube; and
   multiple resilient washers sandwiched between the outer tube and the inner tube.

2. The double-tubed golf club shaft as claimed in claim 1, wherein the multiple washers are evenly-adhered on an outer periphery of the inner tube.