CLAIMS

1. A compact golf club set configurable at player discretion prior to shot play, NOTED for comprising:

At least adjustable-length shaft 100 in multiple discrete length positions 165 enabled by telescoping handle 110; said adjustable-length shaft 100 includes head interchange mechanism 170;

At least interchangeable head 200, 300, 400 in adjustable-length shaft 100, with options for fixed loft heads 201, 301, 401 and adjustable loft heads 202, 302 incorporating adjustable loft mechanism 500a, 500b and sole 504 whose geometry 545 keeps said adjustable loft heads 202, 302 horizontal on the ground for each adjusted loft angle 509a, 509b;

Interchangeable head means both fixed and adjustable loft types and/or combinations thereof:

a) Wood heads 200: 1-wood or driver 210, fairway woods 220, and hybrids;

b) Iron heads 300: 1- to 9-irons 310, 320 and wedges 330: pitch, gab, sand and lob wedges; and/or

c) Putter head 400;

wherein the adjust loft is done by means of an adjustable loft mechanism 500a, 500b comprising:

a) First vertex pivot 511a, 511b joined to the head body;

b) Second joint vertex 512a, 512b matching and joined to loft axis section 537a, 537b;

c) Third vertex pivot 513a, 513b corresponds to the intersection of first connecting rod 514a, 514b extending from the first vertex pivot 511a, 511b and second connecting rod 515a, 515b extending from second joint vertex 512a, 512b;

d) Second connecting rod 515a, 515b joined to loft axis section 537a, 537b; and

wherein the length of at least one of said rods may be modified by changing the relative angle between club head face 506a, 506b and loft axis section 537a, 537b, thereby changing loft angle 509a, 509b.

2. A compact, configurable golf club set per claim 1, NOTED for at least adjustable-length shaft 100 configurable in multiple discrete length positions 165 enabled by telescoping handle 110 and head interchange mechanism 170 comprising:

a) Shaft 160, which in turn comprises:

a.1) Head interchange section 161 comprising head interchange mechanism 170 located at the head connector end;

a.2) Adjustable-length section 163 defined by a constant cross-section which defines adjustment surface 168 and whose end comprises shaft butt section 166 used to attach shaft butt end 167; and

a.3) Transition section 162 connecting head interchange section 161 to adjustable-length section 163;

b) Telescoping handle 110, in turn comprising:

b.1) Handle core 122, comprising a hollow, circular section tube such that its internal diameter matches the external diameter of shaft butt end 167 attached to the shaft butt section of shaft 166;

b.2) Attached to one end of handle core 122 is locking/unlocking telescoping mechanism 130, where the locking function consists of at least one lock element 138 tightly entering one of multiple discrete length positions 165 on the surface of adjustable-length section 163;

b.3) Also attached to handle core 122 is a rubber, leather or cork grip 121 by which player holds telescoping handle 110 and thus adjustable-length shaft 100.

and at least an interchangeable head 200, 300, 400 with adjustable loft mechanism 500a, 500b comprising:

a') Club head face 506, 506a, 506b whose back supports adjustable loft mechanism 500, 500a, 500b during game play.

b') Hosel loft axis 532a, 532b, comprising:

b'.1) Hosel section 533a, 533b connecting to adjustable-length shaft 100. This is either a female hosel protrusion 534a, 534b or male hosel protrusion 535a, 535b. The latter is compatible with head interchange mechanism 170;

b'.2) Loft axis section 537a, 537b holding adjustable loft mechanism 500a, 500b;

b'.3) Offset section 536a connecting loft axis section 537a to hosel section 533a on heel side 508a;

c') Modified sole geometry 545, with a scan section defined by at least three sections 550 where each contains a line along sole 552 cutting across the head volume. Each line is defined when the head rests horizontally 551 on the

ground 549 in front of the ball, in position to contact club head face 506, for at least three adjusted loft angles, one intermediate loft angle 547 and two loft angle ends 548, corresponding to loft angles for the range of heads corresponding to the adjustable head.

3. A compact, configurable golf club set per claim 1, NOTED for an adjustable loft mechanism 500a, 500b comprising that:

Length of one of said rods can be modified by means of screw 516a, 516b whose orientation matches the axis of one of said rods;

One end of screw 516a, 516b rotates on its axis without axial movement, held by a bearing 524a, 524b matching one of the pivot vertices; and

The opposite side of screw 516a, 516b rotates on its axis and moves axially in bearing nut 526a, 526b, matching the pivot vertex opposite.

4. A compact, configurable golf club set per claim 3, NOTED for an adjustable loft mechanism 500a, 500b comprising:

A rear head area comprising the rear of face 502a and/or face frame 503b and/or sole 504a, 504b and/or shell 505b, the latter to accommodate adjustable-loft wood heads 202;

One end of screw 516a, 516b comprises a smooth cylindrical section 517a, 517b rotating in radial bore 525a, 525b perforated on the surface of bearing cylinder 524a, 524b;

The other end comprises a threaded section 518a, 518b screwed into female threaded radial bore 527a, 527b in bearing nut cylinder 526a, 526b;

Bearing cylinder 524a, 524b is a pivot vertex whose axis is perpendicular to the axis of screw 516a, 516b and parallel to the normal defining the plane containing adjustable loft mechanism 500a, 500b, with screw 516a, 516b prevented from axial movement;

Bearing nut cylinder 526a, 526b is another consecutive pivot vertex whose axis is perpendicular to the axis of screw 516a, 516b and also parallel to the normal defining the plane containing adjustable loft mechanism 500a, 500b;

The normal defining the plane containing adjustable loft mechanism 500a, 500b is parallel to loft axis section 537a, 537b; and

Joined connecting rod 540a, 540b is a fixed-length link matching second connecting rod 515a, 515b.

5. A compact, configurable golf club set per claim 4, NOTED for an adjustable loft mechanism 500a, 500b comprising:

In a first configuration, bearing nut cylinder 526a corresponds to first vertex pivot 511a and is connected to the rear head area. Bearing cylinder 524a corresponds to third vertex pivot 513a and is connected to joined connecting rod 540a and, by means of the opposite end of said rod, is attached to loft axis section 537a at second joint vertex 512a;

In a second configuration, bearing cylinder 524b corresponds to first vertex pivot 511b and is connected to the rear head area. Bearing nut cylinder 526b corresponds to third vertex pivot 513b and is connected to joined connecting rod 540b, which corresponds to second connecting rod 515b, and by means of the opposite end of said rod, is attached to loft axis section 537b at the second joint vertex 512b;

Screw 516a, 516b comprises a concentric joint dial 519a, 519b players can rotate with their fingers; and

For adjustable-loft wood heads 202, dial 519b is at the top of screw 516b and above the first vertex pivot 511b. Said dial 519b shows through shell 505b, with a perforation in shell 554b as the preferred solution.

6. A compact, configurable golf club set per claim 4, NOTED for an adjustable loft mechanism 500a, 500b comprising that:

a) Loft axis section 537a, 537b rotates on three concentric pivot brackets whose axis is parallel to the horizontal of the head and stands in the rear head area:

a.1) The first pivot bracket, i.e., loft axis pivot bracket 529a, 529b, is near heel side 508a, 508b;

a.2) A second pair of pivot brackets, i.e., second vertex pivot brackets 530a, 530b, near toe side 507a, 507b, hold the second joint vertex 512a, 512b and second connecting rod 515a, 515b joined to loft axis section 537a, 537b, guiding their rotation;

a.3) The pair of second vertex pivot brackets 530a, 530b and loft axis pivot bracket 529a, 529b, and therefore loft axis section 537a, 537b, stand preferably at the bottom of the head, near sole 504a, 504b;

b) An additional pair of first vertex pivot brackets 531a, 531b hold first vertex pivot 511a, 511b and are joined to the rear head area; and

c) In joined connecting rod 540a, 540b, a pair of third vertex pivot brackets 541a, 541b hold third vertex pivot 513a, 513b in any configuration, including bearing cylinder 524a or bearing nut cylinder 526b.

7. A compact, configurable golf club set per claim 6, NOTED for adjustable an loft mechanism 500a, 500b comprising that:

Joined connecting rod 540a, 540b is attached to loft axis section 537a, 537b by means of a male/female assembly;

Loft axis section 537a, 537b inserts into second joint vertex 512a, 512b an end of its axis in a male shape 538a, 538b, at right angles to joined connecting rod 540a, 540b. Relative rotation is avoided by means of a pin comprising an eccentric pin 539a, 539b parallel to loft axis section 537a, 537b, sharing the radial perimeter of said guide pin 539a, 539b between loft axis section 537a, 537b and joined connecting rod 540a, 540b. Said guide pin 539a, 539b is confined to the width of joined connecting rod 540a, 540b between second vertex pivot brackets 530a, 530b; and

Loft axis section 537a, 537b avoids axial head movement by means of snap ring 544a, 544b attached to loft axis section 537a, 537b and supported on the inner face of loft axis pivot bracket 529a, 529b. Loft axis section 537a, 537b also abuts second vertex pivot bracket 530a, 530b, closest to toe side 507a, 507b.

8. A compact, configurable golf club set per claim 2, NOTED for an adjustable loft mechanism 500b comprising, for adjustable-loft wood heads 202 on the outer surface of face frame 503b on heel side 508b, a heel concavity 553b partially housing hosel section 533b, allowing for loft angles of the range of heads corresponding to the adjustable head.

9. A compact, configurable golf club set per claim 2 , NOTED for a head interchange mechanism 170 comprising:

Pin lock 173, internal interchange cylinder 177 and external interchange cylinder 186, all sliding against each other. Internal interchange cylinder 177 houses pin lock 173. Internal interchange cylinder 177 is joined to shaft head interchange section 161. Internal interchange cylinder 177 and external interchange cylinder 186 can be of various concave and/or convex geometries, such as hexagons;

Pin lock 173 is permanently installed in hollow cylindrical protrusion 198 of standard hosel 199 and is thus joined to fixed loft head 201, 301, 401. In other words, said pin lock can be configured to be properly installed in any commercially-available fixed-loft angle head to turn it into an interchangeable head. Pin lock 173 may also be permanently installed in female hosel protrusion 534a, 534b of hosel section 533a, 533b and thus joined to adjustable loft heads 202, 302;

Pin lock male protrusion 174 rising from hosel section 533a, 533b or standard hosel 199 has torque-resistant geometry. The geometry of the inner surface of internal interchange cylinder 178 matches the geometry of the outer surface of pin lock male protrusion 174;

Internal interchange cylinder 177 houses in surface radial bores 182 at least one lock element 183;

Pin lock male protrusion 174 includes on its surface at least one pin lock dent 175 housing lock elements 183;

In coupled position 171, lock elements 183 slide radially to be confined in pin lock dents 175, said radial bores 182, and the inner surface of external interchange cylinder 187; and

In uncoupled position 172, player slides external interchange cylinder 186 through decoupling recesses 188 on the inner surface of external interchange cylinder 187, allowing lock elements 183 to radially slide, releasing them from pin lock dents 175.

10. A compact, configurable golf club set per claim 9, NOTED for a pin lock male protrusion 174 disposing a smaller end section that is inserted into internal interchange cylinder 177 and expands into hosel section 533a, 533b or standard hosel 199. Said pin lock male protrusion 174 is a concave or convex polygon with at least a distinctive geometry enabling unique assembly orientation. Pin lock hosel protrusion 176 inserted into hosel section 533a, 533b or standard hosel 199 has a hollow cylindrical geometry of such size as to allow attachment by traditional methods of a standard shaft to hosel section 533a, 533b or standard hosel 199.

11. A compact, configurable golf club set per claim 10, NOTED for a pin lock 173 disposing in pin lock hosel protrusion 176 inserted into hosel section 533a, 533b or standard hosel 199 the ability to use traditional attachment methods analogous or equivalent to those of the standard shaft replaced by pin lock 173, including contact cement, cured epoxy resin, locking sleeves, compression cones, interference adjustment, expansion joints, axial

clamping screws, side clamping screws, bolted or riveted joints and/or any technical equivalent.

12. A compact, configurable golf club set per claim 9, NOTED for a head interchange mechanism 170 including hexagonal pin lock 173 comprising:

Hexagonal pin lock male protrusion 174;

At least one hexagonal face has a distinctive geometry enabling a unique assembly position;

Lock elements 183 are balls;

Locking ball(s) 183 are emplaced in one or more conical, equidistant radial bores 182 in an area corresponding to a hexagonal section of the inner surface of internal interchange cylinder 178;

Pin lock dents 175 are recessed semispheres of a diameter at their widest point not exceeding that of locking balls 183;

Pin lock dents 175 are emplaced in hexagonal pin lock 173 and match the position of said radial bores 182 and thus of locking balls 183 when head interchange mechanism 170 is in the coupled position.

~~13. A compact, configurable golf club set per claim 12, NOTED for pin lock dents 175 providing a configuration alternative comprising an area whose geometry is a revolving circular section whose axis of rotation matches the pin lock axis and its widest section is of a size not exceeding that of locking balls 183.~~

~~14~~13. A compact, configurable golf club set per claim 9, NOTED for an internal interchange cylinder 177 housing on outer surface 179 a coupling spring 184, which when extended pushes external interchange cylinder 186 into coupled position 171. The depressed coupling spring 184 pushes external interchange cylinder 186 into uncoupled position 172. Player motion on external interchange cylinder 186 and thus on coupling spring 184 may be axial, torsion, or a combination thereof.

~~15~~14. A compact, configurable golf club set per claim 9, NOTED for head interchange mechanism 170 alternatively including decoupling spring 185 at the bottom of internal interchange cylinder 177, which remains depressed against the tip of pin lock male protrusion 174 when in coupled position 171.

~~16~~15. A compact, configurable golf club set per claim 9, NOTED for pin lock 173 being alternatively replaced by male hosel protrusion 535a, 535b compatible with head interchange mechanism 170, formed during manufacture of hosel loft axis 532a, 532b and equivalent to pin lock male protrusion 174 of previously described pin lock 173 rising from hosel section 533a, 533b or standard hosel 199.

~~17~~16. A compact, configurable golf club set per claim 9, NOTED for head interchange mechanism 170 alternatively including guide pin 181 traveling on guide slot 180, limiting travel of external interchange cylinder 186. Said guide pin 181 is joined to and passes through external interchange cylinder 186. Said guide slot 180 of the width of guide pin 181 proceeds in lengthwise recess

parallel to the axis and over the outer surface of internal interchange cylinder 177.

~~18~~17. A compact, configurable golf club set per claim 2, NOTED for a telescoping mechanism 130 comprising:

Internal telescoping cylinder 136 and external telescoping cylinder 133 sliding against each other. Internal telescoping cylinder 136 slides over adjustable-length section 163 and is joined to handle core 122 and thereby to handle 120. One or more lock radial bores 137 on the surface of internal telescoping cylinder 136 house at least one lock element 138. Internal telescoping cylinder 136 and external telescoping cylinder 133 can be of various concave and/or convex geometries, such as hexagons;

Discrete length positions 165 are developed by means of at least one shaft dent 165 on adjustment surface 168. Said dents house lock elements 138. The said adjustment surface has torque-resistant geometry;

In locked position 131, lock element(s) 138 slide radially until confined in shaft dents 165, in the said lock radial bores 137, and in the inner surface of external telescoping cylinder 134;

In unlocked position 132, player slides external telescoping cylinder 133 through unlock recesses 135 on the inner surface of external telescoping cylinder 134, allowing lock element(s) 138 to radially slide, releasing them from shaft dents 165.

~~19. A compact, configurable golf club set per claim 18, NOTED for an adjustment surface 168 including a series of surface shaft dents 165 built as a~~

continuous surface relative to the surface of shaft 160. In other words, said dents do not cause abrupt discontinuity of surface material as they are not holes in the shaft and the adjustment surface 168 including at least one discontinuity as a guide slot for telescoping mechanism 130. Such discontinuity has torque-resistant geometry. In particular, the guide slot may be at least a flat surface 164 or U- or V-shaped relative to the shaft surface. The inner surface of internal telescoping cylinder 139 matches said adjustment surface 168.

20. A compact, configurable golf club set per claim 19, NOTED, if shaft 160 is built in composite material, for shaft dents 165 of the surface of adjustable-length section 163 including that the entire area around shaft dents 165, as well as the area comprising shaft dents 165, do not break fiber continuity. If shaft 160 is built in polycrystalline material such as steel, the entire area around shaft dents 165, as well as the area comprising shaft dents 165, do not break crystalline structure continuity.

21. A compact, configurable golf club set per claim 19 , NOTED for an adjustment surface 168 having a circular section and another section made up of two opposing, 180° flat surfaces 164. The flat surfaces house shaft dents 165. Dents may be recessed semispheres in opposing, 180° pairs located on the opposing flat surfaces. As such, lock elements 138 are spheres whose radius matches said dents and for a shaft 160 of mixed materials, where the body of shaft 160, in all sections, is built in composite material. However, the outer surface of adjustment surface 168 is built using a thin sheet of material harder than the composite, such as steel, attached to the inner composite

~~material layers. A variant has the said harder sheet covering only the outer surface part containing the sequence of shaft dents 165.~~

~~22. A compact, configurable golf club set per claim 21, NOTED for the fact that opposing flat surfaces 164 housing shaft dents 165 may on their outer surface and thus on their surface finish be built in individual sheets of thin polycrystalline material such as steel and affixed to the composite body of shaft 160. Construction of said sheets of crystalline structure material includes shaft dents 165.~~

~~23~~18. A compact, configurable golf club set per claim ~~18~~17, NOTED for an internal telescoping cylinder 136 housing on its outer surface lock spring 142, which when extended pushes external telescoping cylinder 133 into locked position 131. When depressed, lock spring 142 pushes external telescoping cylinder 133 into unlocked position 132. Player motion on external telescoping cylinder 133 and thus on spring 142 may be axial, torsion, or a combination thereof.

~~24. A compact, configurable golf club set per claim 18, NOTED for an internal telescoping cylinder 136 including position radial bore 144 containing position ball pointer 140 partially entering shaft dents 165. The ball is radially pressed against the shaft by means of ring-type spring 141 covering said ball 140 and the outer surface of said internal telescoping cylinder 136.~~

~~25~~19. A compact, configurable golf club set per claim ~~18~~17, NOTED for an internal telescoping cylinder 136 including travel stopper 143 for external telescoping cylinder 133. Said stopper is a small tab at the start of the outer surface of internal telescoping cylinder 136 that clicks into unlock recess 135 on the inner surface of external telescoping cylinder 134 and sets the limits of travel.

~~26~~20. A compact, configurable golf club set per claim 2, NOTED for a shaft butt section 166 comprising shaft butt end 167, which guides and constrains maximum length of telescoping handle 110.

~~27~~21. Method for assembly of a club in the compact, configurable golf club set of claim 1, based on interchangeable head 200, 300, 400 with fixed loft option 201, 301, 401, NOTED for comprising the following steps to be performed by player prior to shot play:

Connect said fixed loft head 201, 301, 401 to adjustable-length shaft 100 by means of head interchange mechanism 170;

Extend or retract adjustable-length shaft 100 by means of telescoping mechanism 130 in telescoping handle 110; and

Verify club configuration and horizontal rest of attached head in striking position in front of the ball.

~~28. Method for assembly of the compact, configurable golf club set in claim 9, NOTED for the fact that the step of coupling interchangeable head 200, 300, 400 by means of head interchange mechanism 170 requires players to~~

~~shift external interchange cylinder 186 from coupled position 171 to uncoupled position 172.~~

~~29~~22. Method for assembly of the compact, configurable golf club set in claim 7, NOTED for comprising the following steps to be performed by player prior to shot play:

Connect said adjustable loft head 202, 302 to adjustable-length shaft 100 by means of head interchange mechanism 170;

Adjust loft angle 509a, 509b of said adjustable loft head 202, 302;

Extend or retract adjustable-length shaft 100 by means of telescoping mechanism 130 in telescoping handle 110; and

Verify club configuration and horizontal rest of attached head by placing sole 504 on the ground in striking position in front of the ball.

and for the fact that the step of adjusting loft angle 509a, 509b requires players to turn dial 519a, 519b in adjustable loft mechanism 500a, 500b.

~~30. Method for assembly of the compact, configurable golf club set in claim 18, NOTED for the fact that the step of extending or retracting adjustable-length shaft 100 requires players to shift external telescoping cylinder 133 from locked position 131 to unlocked position 132, sliding telescoping handle 110 over adjustable-length section 163 to the desired position and releasing said external telescoping cylinder 133 so it returns to locked position 131.~~

~~31. Method for assembly of the compact, configurable golf club set in claim 29, NOTED for the fact that the step of extending or retracting adjustable-~~

length shaft 100 requires players to shift external telescoping cylinder 133 from locked position 131 to unlocked position 132, sliding telescoping handle 110 over adjustable-length section 163 to the desired position and releasing said external telescoping cylinder 133 so it returns to locked position 131.

32. Method for assembly of the compact, configurable golf club set in claim 27, NOTED for the fact that the step of extending or retracting adjustable-length shaft 100 requires players to shift external telescoping cylinder 133 from locked position 131 to unlocked position 132, sliding telescoping handle 110 over adjustable-length section 163 to the desired position and releasing said external telescoping cylinder 133 so it returns to locked position 131.

33. Method for assembly of the compact, configurable golf club set in claim 29, NOTED for the fact that the step of coupling interchangeable head 200, 300, 400 by means of head interchange mechanism 170 requires players to shift external interchange cylinder 186 from coupled position 171 to uncoupled position 172.

34. Method for assembly of the compact, configurable golf club set in claim 27, NOTED for the fact that the step of coupling interchangeable head 200, 300, 400 by means of head interchange mechanism 170 requires players to shift external interchange cylinder 186 from coupled position 171 to uncoupled position 172.