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(54) **VARIABLE GOLF PUTTER**

(57) A variable golf putter is disclosed. The variable golf putter includes a putter head coupled to the lower end of a shaft, the putter head having a head hitting surface, and a hitting member selectively coupled to the putter head, wherein a through hole, through which a fastening bolt extends upwards from the bottom surface thereof, is formed in the putter head so as to be stepped, an incision portion configured to open a portion of the upper surface of the putter head in a hitting direction is formed in the head hitting surface corresponding to the through hole, the hitting member is formed in a golf ball shape and has a hitting surface formed on the outer circumferential surface thereof, a seating surface and a supporting surface supported by an edge of the upper surface so as to be seated on the upper surface are formed at the bottom surface of the hitting member so as to be stepped, a screw fastening recess, to which the fastening bolt is coupled by fastening, is formed in the seating surface, the hitting member is replaceably coupled to the putter head via the fastening bolt in the state of being seated on the surface such that a portion of the hitting surface protrudes through the incision portion more than the head hitting surface, the hitting surface of the hitting member is constituted by a spherical hitting surface having the same curvature as a golf ball or a planar hitting surface, in the case in which the hitting surface is constituted by a planar hitting surface, a plurality of hitting members is provided by area of the planar hitting surface and is selectively coupled to the putter head, and a hitting material made of a material different from the material of the hitting member is provided integrally at the spherical hitting surface or the planar hitting surface. The hitting member has various hitting surfaces, whereby it is possible to perform putting practice in various manners. In addition, the hitting member and the hitting material made of a material different from the material of the hitting member are formed integrally with each other, whereby it is possible to provide various hitting sensations and thus to efficiently perform putting practice.

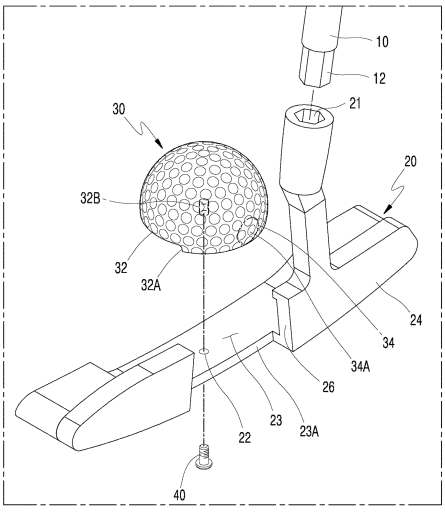

FIG.3

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Description

[Technical Field]

[0001] The present disclosure relates to a variable golf putter, and more particularly to a variable golf putter capable of replacing and using a hitting surface of the putter and of providing various hitting sensations, thereby efficiently performing putting practice to accurately putt a golf ball on a putting green into a hole cup.

[Background Art]

[0002] In general, a putter is a tool used when directly hitting a ball on a green toward a hole cup using an iron club for putting, and putting means an action of hitting a ball using a putter.

[0003] In order to successfully perform putting, a putting direction and sense of distance are important. However, the most basic requirement is a correct putting posture. To this end, a great number of practice putts must be performed for a long time to learn such a sensation.

[0004] Here, the correct putting posture means that both hands holding a grip perform a pendulum motion about the head of a golfer at the time of swing and the head of a putter impacts a ball at the lowest point of the pendulum motion. The ball hit at the posture described above will travel to a desired position.

[0005] If the wrists are bent or the body shakes at the time of swing, the pendulum motion is not accurately performed. As a result, the ball is impacted at an inappropriate position, whereby the ball is not sent to a desired position.

[0006] In order to solve this problem, putting practice may be performed using a putter for practice.

[0007] As a prior art document, a putter for golf practice is disclosed in Korean Registered Utility Model No. 20-0350462 (published on May 13, 2004).

[0008] As shown in FIG. 1, a conventional putter 1 for golf practice is configured such that a triangular or semicircular hitting protrusion 2A configured to accurately hit a golf ball 2 is formed at the center of the front of a putter head 2. The putter 1 for golf practice has an advantage in that it is possible to perform practice of accurately hitting the golf ball 3 using the semicircular hitting protrusion 2A.

[0009] In the putter 1 described above, however, the putter head 2 and the hitting protrusion 2A are integrally formed, whereby it is not possible to apply hitting protrusions 2A having various structures.

[0010] As another prior art document, a putting practice member for golf putters is disclosed in Korean Registered Utility Model No. 20-0395835 (published on September 14, 2005). As shown in FIG. 2, fixing plates 1' and 1" are formed at opposite sides of a putting member 1 having a hitting portion 1A having the largest width formed at the middle portion thereof and a center line 101 marked on the upper surface thereof, the putting member 1 is fixed to a putter head 2 using rubber bands 3 in the state in which the fixing plates 1' and 1" are in contact with the putter head 2. The putting practice member having the structure described above is configured to replace the putting member 1. Since the putting member 1 is coupled to the putter head using the rubber bands 3, however, it is not possible to maintain strong force of coupling therebetween.

[0011] Also, in the above prior art documents, the putter head is made of a single material and is formed in a single shape, whereby it is not possible to learn various hitting sensations.

[Disclosure]

[Technical Problem]

[0012] It is an object of the present disclosure to provide a variable golf putter capable of using various hitting surfaces and providing various hitting sensations.

[0013] The present disclosure is not limited to what has been described above, and other aspects not mentioned herein will be apparent from the following description to one of ordinary skill in the art to which the present disclosure pertains.

[Technical Solution]

[0014] In accordance with the present disclosure, the above object can be accomplished by the provision of a variable golf putter including a putter head coupled to the lower end of a shaft, the putter head having a head hitting surface, and a hitting member selectively coupled to the putter head, wherein a through hole, through which a fastening bolt extends upwards from the bottom surface thereof, is formed in the putter head so as to be stepped, an incision portion configured to open a portion of the upper surface of the putter head in a hitting direction is formed in the head hitting surface corresponding to the through hole, the hitting member is formed in a golf ball shape and has a hitting surface formed on the outer circumferential surface thereof, a seating surface and a supporting surface supported by an edge of the upper surface so as to be seated on the upper surface are formed at the bottom surface of the hitting member so as to be stepped, a screw fastening recess, to which the fastening bolt is coupled by fastening, is formed in the seating surface, the hitting member is replaceably coupled to the putter head via the fastening bolt in the state of being seated on the surface such that a portion of the hitting surface protrudes through the incision portion more than the head hitting surface, the hitting surface of the hitting member is constituted by a spherical hitting surface having the same curvature as a golf ball or a planar hitting surface, and, in the case in which the hitting surface is constituted by a planar hitting surface, a plurality of hitting members is provided by area of the planar

hitting surface and is selectively coupled to the putter head.

[0015] In accordance with the present disclosure, the above object can be accomplished by the provision of a variable golf putter including a putter head coupled to the lower end of a shaft, the putter head having a head hitting surface, and a hitting member selectively coupled to the putter head, wherein a through hole, through which a fastening bolt extends upwards from the bottom surface thereof, is formed in the putter head so as to be stepped, an incision portion configured to open a portion of the upper surface of the putter head in a hitting direction is formed in the head hitting surface corresponding to the through hole, a triangular to octagonal coupling protrusion protrudes upwards from the upper surface in which the through hole is formed, the hitting member is formed in a golf ball shape or a polygonal shape, hitting surfaces having different shapes and different sizes are formed on the outer surface of the hitting member, a seating surface, which is seated on the upper surface, is formed at the bottom surface of the hitting member, a triangular to octagonal coupling recess is formed in the seating surface such that the coupling protrusion is inserted into and coupled to the coupling recess when the seating surface is seated on the upper surface, and has coupling surfaces having identical directions to the hitting surfaces, a screw fastening recess, to which the fastening bolt is coupled by fastening, is formed in the coupling recess, the coupling protrusion is coupled to the coupling recess in the state in which an orientation of the hitting member is set such that a hitting surface selected from among the hitting surfaces is exposed through the incision portion, the fastening bolt is coupled to the screw fastening recess of the coupling recess through the through hole by fastening, the hitting surface of the hitting member is constituted by a spherical hitting surface having identical curvature to a golf ball or a planar hitting surface, and, in the case in which the hitting surface is constituted by a planar hitting surface, a plurality of hitting members is provided by area of the planar hitting surface and is selectively coupled to the putter head.

[0016] A hitting material made of a material different from the material of the hitting member may be provided integrally at the spherical hitting surface or the planar hitting surface, and a hitting material recess formed in the spherical hitting surface or the planar hitting surface may be filled with the hitting material, or the hitting material may be integrally formed with the hitting member through insert injection molding.

[0017] The lower end of the shaft may be formed in a polygonal shape, polygonal coupling portions, to each of which the lower end of the shaft is coupled, may be formed at opposite sides of the putter head such that one of the polygonal coupling portions is selected and used by a left-handed person or a right-handed person, and the lower end of the shaft and the coupling portion may be coupled to each other via a bolt fastened from the bottom surface of the putter head in the state in which the lower end of the shaft is fitted in the coupling portion such that the coupling angle therebetween is adjusted.

[0018] A thickness adjustment recess may be formed around the coupling recess of the hitting member, and the thickness adjustment recess may be formed so as to have different widths such that the hitting surfaces have different thicknesses based on the coupling surfaces, whereby different hitting sensations and hitting sounds are generated.

[0019] In accordance with the present disclosure, the above object can be accomplished by the provision of a variable golf putter including a putter head having a coupling bar, one end of which is coupled to the lower end of a shaft, the coupling bar extending in a horizontal direction, and a hitting member having a hitting surface configured to hit a golf ball, the hitting surface being formed on one side thereof, and a spherical or planar practice hitting surface formed on the other side thereof, the hitting member being coupled to the coupling bar of the putter head, wherein the hitting member is formed as a single body or is divided into two or five parts having different sizes and shapes such that the hitting surface and the practice hitting surface are selected, the hitting member being coupled to the coupling bar, the lower end of the shaft is formed in a polygonal shape, a polygonal coupling portion, to which the lower end of the shaft is coupled, is formed at the putter head, and the lower end of the shaft and the coupling portion are coupled to each other via a bolt fastened from the bottom surface of the putter head in the state in which the lower end of the shaft is fitted in the coupling portion such that the coupling angle therebetween is adjusted.

[0020] A hitting material made of a material different from the material of the hitting member may be provided integrally at the hitting surface and the practice hitting surface, and hitting material recesses formed in the hitting surface and the practice hitting surface may be filled with the hitting material, or the hitting material may be integrally formed with the hitting member through insert injection molding.

[0021] In the case in which the hitting member is divided, the divided hitting members may be made of different materials.

[0022] In the case in which the practice hitting surface is formed in a spherical shape, a spherical hitting portion having curvature smaller than curvature of the outer circumferential surface of the hitting member may be formed at the practice hitting surface, and a spherical hitting surface may be formed at the spherical hitting portion.

[0023] In accordance with the present disclosure, the above object can be accomplished by the provision of a variable golf putter including a putter head coupled to the lower end of a shaft, wherein the putter head includes a first hitting member which is formed in a spherical shape having a golf ball shape and to which the lower end of the shaft is coupled, a second hitting member which is formed in a spherical shape having a golf ball shape and

which is coupled to a side surface of the first hitting member in a horizontal direction so as to be located on a straight line together with the first hitting member, a third hitting member which is formed in a spherical shape having a golf ball shape and which is coupled to a side surface of the second hitting member in the horizontal direction so as to be located on a straight line together with the first hitting member and the second hitting member, and a coupling rod having one end to which a nut is fastened after the coupling rod extends through the first hitting member, the second hitting member, and the third hitting member and the other end to which the shaft is fastened, the coupling rod being configured to integrate the first hitting member, the second hitting member, and the third hitting member, a spherical hitting surface having identical curvature to a golf ball and planar hitting surfaces are formed at each of the first hitting member, the second hitting member, and the third hitting member, the planar hitting surfaces being formed so as to have different sizes, the first hitting member, the second hitting member, and the third hitting member are made of different materials, a hitting material made of a material different from materials of the first hitting member, the second hitting member, and the third hitting member is provided integrally at the spherical hitting surface and the planar hitting surfaces, and hitting material recesses formed in the spherical hitting surface and the planar hitting surfaces are filled with the hitting material, or the hitting material is integrally formed with the hitting member through insert injection molding.

[0024] A position changing means configured to change positions of the second hitting member and the third hitting member, to select the spherical hitting surface and the planar hitting surfaces, and to change the hitting surfaces depending on whether a user is a right-handed person or a left-handed person may be provided at each of the first hitting member, the third hitting member, and opposite surfaces of the second hitting member that face the first hitting member and the third hitting member, and the position changing means may include a polygonal connection and coupling member having a predetermined length and a polygonal positioning recess formed in a corresponding one of opposite surfaces of the first hitting member, the second hitting member, and the third hitting member such that the connection and coupling member is coupled to the positioning recess by insertion.

[0025] In accordance with the present disclosure, the above object can be accomplished by the provision of a variable golf putter including a hitting member having one end coupled to the lower end of a shaft, a hitting surface configured to hit a golf ball being formed on one side of the hitting member, a spherical or planar practice hitting surface being formed on the other side of the hitting member, wherein the lower end of the shaft is formed in a polygonal shape, a polygonal coupling portion, to which the lower end of the shaft is coupled, is formed at the hitting member, and the lower end of the shaft and the coupling portion are coupled to each other via a bolt fastened from the bottom surface of the hitting member in the state in which the lower end of the shaft is fitted in the coupling portion such that the coupling angle therebetween is adjusted.

[0026] In accordance with the present disclosure, the above object can be accomplished by the provision of a variable golf putter including a putter head having a shaft coupling hole, to which the lower end of a shaft is coupled, and a head hitting surface, and a hitting member selectively coupled to the putter head, wherein a through hole, through which a fastening bolt extends upwards from the bottom surface thereof, is formed in the putter head so as to be stepped, an incision portion configured to open a portion of the upper surface of the putter head in a hitting direction is formed in the head hitting surface corresponding to the through hole, a coupling portion is formed around the through hole, a hitting surface is formed at one or each of outer surfaces of the hitting member, a coupling recess, to which the coupling portion is coupled by insertion, is formed in the bottom surface of the hitting member so as to be open downwards, a screw fastening recess is formed in the bottom surface of the coupling recess, the fastening bolt is fastened to the screw fastening recess through the through hole in the state in which the coupling portion is inserted into and coupled to the coupling recess such that the hitting surface protrudes through the incision portion more than the head hitting surface or coincides with the head hitting surface, whereby the hitting member is replaceably coupled to the putter head, and a hitting sound generation recess configured to generate a hitting sound when a golf ball is hit by all the hitting surface or a region of the hitting surface corresponding to a positive hitting point is formed in the hitting member.

[0027] The hitting sound generation recess may be formed in a region corresponding to the hitting surface or a region of the hitting surface corresponding to the positive hitting point so as to be open toward the bottom, the side, or the top of the hitting member or toward the coupling recess.

[0028] The hitting sound generation recess may be filled with a metal material or a synthetic resin material different from a material of the hitting member, the metal material or the synthetic resin material may be coupled to the hitting sound generation recess by insertion, or the metal material or the synthetic resin material may be integrally formed with the hitting member through insert injection molding.

[0029] The hitting member may be formed in the shape of a sphere, a hemisphere, or a combination of a polygon and a sphere, and a mark configured to indicate the hitting direction may be formed on the outer circumferential surface of the hitting member in the form of a plurality of recesses or a line.

[0030] A decorative member for decoration may be provided at the upper surface of the hitting member, and a portion of the decorative member may be coupled to

the hitting member by insertion, or a fastening portion provided at the decorative member may be coupled to a screw hole formed in the upper surface of the hitting member by fastening.

[0031] Shaft coupling holes of the putter head may be formed in opposite sides of the putter head such that a right-handed person or a left-handed person selects one of the shaft coupling holes and couples the shaft to the selected shaft coupling hole.

[0032] In the case in which the hitting member is formed in the shape of a sphere, a hemisphere, or a combination of a polygon and a sphere, the hitting surface is formed at the outer circumference of the hitting member, and the distance between the center of the hitting member and a hitting position is preset, a hemispherical auxiliary member may be formed at the hitting surface so as to protrude and an auxiliary hitting surface may be formed at the hemispherical auxiliary member such that the area of the hitting surface is increased or decreased.

[Advantageous Effects]

[0033] According to the present disclosure, the hitting member has various hitting surfaces, whereby it is possible to putt and to perform putting practice in various manners. In addition, a hitting material made of a material different from the material of the hitting member is formed integrally with the hitting member, whereby it is possible to provide various hitting sensations and thus to efficiently perform putting practice.

[0034] In addition, a hitting sound generation recess is formed in the hitting member such that a bright hitting sound is generated when a golf ball is hit at a positive hitting point of the hitting surface, whereby it is possible to easily recognize that correct hitting has been performed.

[Description of Drawings]

[0035]

FIGS. 1 and 2 are views showing a conventional golf putter for practice.

FIG. 3 is an exploded perspective view showing a variable golf putter according to a first embodiment of the present disclosure.

FIGS. 4, 5, and 6 are perspective views showing other embodiments of a hitting member shown in FIG. 3.

FIG. 7 is a sectional view showing a coupling state of the golf putter for practice shown in FIG. 3.

FIG. 8 is a plan view showing a use state of the golf putter for practice shown in FIG. 3.

FIGS. 9, 10, 11, and 12 are views showing a variable golf putter according to a second embodiment of the present disclosure.

FIG. 13 is a schematic plan view showing a use state of the variable golf putter shown in FIGS. 7 to 10.

FIG. 14 is a perspective view showing a variable golf putter according to a third embodiment of the present disclosure.

FIG. 15 is an exploded perspective view showing a variable golf putter according to a fourth embodiment of the present disclosure.

FIG. 16 is a sectional view showing a coupling state of the variable golf putter shown in FIG. 15.

FIG. 17 is an exploded perspective view showing another embodiment of the variable golf putter shown in FIG. 15.

FIGS. 18, 19, and 20 are views showing other embodiments of a hitting member shown in FIG. 17.

FIG. 21 is an exploded perspective view showing a variable golf putter according to a fifth embodiment of the present disclosure.

FIG. 22 is a sectional view showing a coupling state of the variable golf putter shown in FIG. 21.

FIGS. 23 and 24 are plan views showing a use state of the variable golf putter shown in FIG. 21.

FIG. 25 is an exploded perspective view showing a variable golf putter according to a sixth embodiment of the present disclosure.

FIG. 26 is a perspective view showing a coupling state of the variable golf putter shown in FIG. 25.

FIG. 27 is a sectional view taken along line A-A of FIG. 26.

FIG. 28 is a bottom view showing a hitting member shown in FIG. 26.

* Description of reference symbols *

[0036]

10: Shaft 20, 200: Putter heads
21: Coupling portion 22: Through hole
23: Upper surface 23A: Edge
24: Hitting surface of putter head 25: Seating recess
26: Incision portion 27: Coupling protrusion
30: Hitting member 31: Hitting material recess
32: Seating surface 32A: Supporting surface
32B: Screw fastening recess 32C: Coupling recess
32C-1: Coupling surface 33: Coupling portion
34, 340: Hitting surfaces 34-1: Practice hitting surface
34A, 34-2, 320: Spherical hitting surfaces 34B, 340: Planar hitting surfaces
35: Insertion recess
37: Thickness adjustment recess 39: Hitting material
40: Fastening bolt 210: Coupling bar
300A: First hitting member 300B: Second hitting member
300C: Third hitting member 400: Coupling rod
500: Position changing means 510, 510A, 510B: Connection and coupling members
520: Positioning recess

[Best Mode]

[0037] The present disclosure provides a variable golf putter including a putter head coupled to the lower end of a shaft, the putter head having a head hitting surface, and a hitting member selectively coupled to the putter head, wherein a through hole, through which a fastening bolt extends upwards from the bottom surface thereof, is formed in the putter head so as to be stepped, an incision portion configured to open a portion of the upper surface of the putter head in a hitting direction is formed in the head hitting surface corresponding to the through hole, the hitting member is formed in a golf ball shape and has a hitting surface formed on the outer circumferential surface thereof, a seating surface and a supporting surface supported by an edge of the upper surface so as to be seated on the upper surface are formed at the bottom surface of the hitting member so as to be stepped, a screw fastening recess, to which the fastening bolt is coupled by fastening, is formed in the seating surface, the hitting member is replaceably coupled to the putter head via the fastening bolt in the state of being seated on the surface such that a portion of the hitting surface protrudes through the incision portion more than the head hitting surface, the hitting surface of the hitting member is constituted by a spherical hitting surface having the same curvature as a golf ball or a planar hitting surface, and, in the case in which the hitting surface is constituted by a planar hitting surface, a plurality of hitting members is provided by area of the planar hitting surface and is selectively coupled to the putter head. Consequently, a user may select the hitting surface and may then couple the hitting member to the putter head, whereby various hitting sensations may be provided to the user.

[Mode for Invention]

[0038] Reference will now be made in detail to the preferred embodiments of the present disclosure, examples of which are illustrated in the accompanying drawings. In the following description of the present disclosure, however, a detailed description of known functions and configurations incorporated herein will be omitted when it may obscure the subject matter of the present disclosure.

[0039] Among the accompanying drawings, FIG. 3 is an exploded perspective view showing a variable golf putter according to a first embodiment of the present disclosure, FIGS. 4, 5, and 6 are perspective views showing other embodiments of a hitting member shown in FIG. 3, FIG. 7 is a sectional view showing a coupling state of the golf putter for practice shown in FIG. 3, and FIG. 8 is a plan view showing a use state of the golf putter for practice shown in FIG. 3.

[0040] As shown in FIGS. 3 to 8, the variable golf putter according to the first embodiment of the present disclosure includes a putter head 20 and a hitting member 30 selectively coupled to the putter head 20.

[0041] The putter head 20 is coupled to the lower end 12 of a shaft 10, and has a head hitting surface 24 formed in a hitting direction.

[0042] A through hole 22, through which a fastening bolt 40 extends upwards from the bottom surface thereof, is formed in the putter head 20 so as to be stepped, and an incision portion 26 configured to open a portion of the upper surface 23 of the putter head 20 in the hitting direction is formed in the central region of the head hitting surface 24 corresponding to the through hole 22.

[0043] The hitting member 30 is formed in a spherical shape, such as a golf ball shape, and has a hitting surface 34 formed on the outer circumferential surface thereof. A seating surface 32 and a supporting surface 32A supported by the edge of the upper surface 23 of the putter head 20 so as to be seated on the upper surface 23 are formed at the bottom surface of the hitting member 30 so as to be stepped. A screw fastening recess 32B, to which the fastening bolt 40 is coupled by fastening, is formed in the seating surface 32.

[0044] The hitting member 30 is replaceably coupled to the putter head 20 via the fastening bolt 40 in the state of being seated on the surface 23 such that a portion of the hitting surface 34 of the hitting member 30 protrudes through the incision portion 26 more than the head hitting surface 23.

[0045] The hitting surface 34 of the hitting member 30 is constituted by a spherical hitting surface 34A having the same curvature as a golf ball or a planar hitting surface 34B. In the case in which the hitting surface of the hitting member is constituted by a planar hitting surface 34B, a plurality of hitting members 30 is provided by area of the planar hitting surface 34B, and is selectively coupled to the putter head 20. A hitting material 39 made of a material different from the material of the hitting member 30 is provided integrally at the spherical hitting surface 34A or the planar hitting surface 34B.

[0046] This will be described in more detail.

[0047] The through hole 22, through which the fastening bolt 40 extends upwards from the bottom surface thereof, is formed in the putter head 20 so as to be stepped. The incision portion 26 configured to open a portion of the upper surface 23 of the putter head 20 in the hitting direction is formed in the central region of the head hitting surface 24 corresponding to the through hole 22, i.e. equivalent to the region in which the through hole 22 is formed, as shown in FIG. 3. The incision portion 26 is configured to expose a portion of the hitting surface 34 forwards (in the hitting direction) when the hitting member 30 is coupled to the upper surface 23 of the putter head 20.

[0048] The reason that the through hole 22 is formed so as to be stepped is that it is necessary to prevent a head portion of the fastening bolt 40 from protruding outwards from the bottom surface of the putter head 20 when the fastening bolt 40 is coupled to the hitting member 30 through the through hole 22. Preferably, the through hole 22 and the incision portion 26 are formed in the middle

(the central region) of the putter head 20.

[0049] The hitting member 30 is configured to be selectively coupled to or separated from the putter head 20. The hitting member 30 is formed so as to have the same shape as a golf ball and to have a size equal or similar to the size of the golf ball, as shown in FIG. 3. The spherical or planar hitting surface 34 is formed on the outer circumferential surface of the hitting member 30. The seating surface 32, on which the upper surface 23 of the putter head 20 is seated, is formed on the bottom surface of the hitting member 30, and the supporting surface 32A, which is supported by the edge 23A of the upper surface 23 when the seating surface 32 is seated on the upper surface 23, is formed at one side of the seating surface 32 so as to be stepped. This structure is configured to stably absorb impact generated when hitting a golf ball using the hitting surface 34 by the provision of the supporting surface 32A. In addition, the screw fastening recess 32B, to which the fastening bolt 40 is coupled by fastening, is formed in the seating surface 32, and has a female screw thread formed therein.

[0050] The hitting member 30 configured as described above is replaceably coupled to the putter head 20 via the fastening bolt 40 in the state of being seated on the surface 23 such that a portion of the hitting surface 34 of the hitting member 30 protrudes through the incision portion 26 more than the head hitting surface 23. In addition, the head portion of the fastening bolt 40 is seated in the stepped through hole 33, and therefore the head portion is prevented from protruding outwards from the bottom surface of the putter head 20 when the fastening bolt 40 is coupled to the screw fastening recess 32B from the bottom surface of the putter head 20 through the through hole 22.

[0051] The hitting surface 34 of the hitting member 30 is constituted by a spherical hitting surface 34A having the same curvature as a golf ball or a planar hitting surface 34B. In the case in which the hitting surface of the hitting member is constituted by a planar hitting surface 34B, a plurality of hitting members 30 is preferably provided by area of the planar hitting surface 34B. That is, in the case in which a plurality of hitting members 30 having different sizes of planar hitting surfaces 34B is provided, a user may select a hitting member 30 having a desired size of a planar hitting surface 34B, may couple the selected hitting member to the putter head 20, and may use the putter head.

[0052] A hitting material 39 made of a material different from the material of the hitting member 30 is provided integrally at the spherical hitting surface 34A or the planar hitting surface 34B of the hitting member 30. That is, as shown in FIGS. 5, 6, and 7, a plurality of hitting material recesses 31 each having a predetermined depth is formed in the spherical hitting surface 34A or the planar hitting surface 34B, and the hitting material recesses 31 are filled with a hitting material 39 made of a material different from the material of the hitting member 30 so as to be integrated, or the hitting material is integrally formed with the hitting member 30 through insert injection molding. For example, in the case in which the hitting member 30 is made of iron, the hitting material recesses 31 are filled with a material other than iron, such as copper or aluminum, or integration between the hitting member and the hitting material is achieved through insert injection molding.

[0053] As described above, the hitting material recesses 31 are formed in the spherical hitting surface 34A or the planar hitting surface 34B, and a hitting material 39 made of a material different from the material of the hitting member 30 is provided integrally in the hitting material recesses 31, whereby it is possible to provide various hitting sensations and hitting sounds to a user who putts.

[0054] In this embodiment, the hitting material recesses 31 are filled with the hitting material 39, or the hitting material is integrally formed with the hitting member 30 through insert injection molding. However, the present disclosure is not limited thereto. As shown in FIG. 18, protrusions 31-1 may be formed on the bottoms of the hitting material recesses 31, and gaps between the protrusions 31-1, i.e. the hitting material recesses 31, may be filled with the hitting material 39 so as to be integrated, or the hitting material may be integrally formed with the hitting member through insert injection molding.

[0055] Meanwhile, the variable golf putter according to this embodiment has a structure in which the lower end of the shaft 10 is formed in a polygonal shape and a polygonal coupling portion 21, to which the lower end 12 of the shaft 10 is coupled, is formed at the putter head 20. The lower end 12 and the coupling portion 21 may be formed so as to have a sawtooth structure (spline coupling), rather than the polygonal structure, so as to be coupled with each other. The lower end 12 of the shaft 10 and the coupling portion 21 are coupled to each other via a bolt (not shown) fastened to the lower end 12 of the shaft 10 through the bottom surface of the putter head 20 or the side surface of the upper end of the putter head at which the coupling portion 21 is formed in the state in which the lower end 12 is fitted in the coupling portion 21 such that the coupling angle therebetween is adjusted. Of course, the lower end 12 and the coupling portion 21 may be securely coupled to each other via a separate fixing means in the state in which the lower end is fitted in the coupling portion.

[0056] Since each of the lower end 12 of the shaft 10 and the coupling portion 21 is formed so as to have a polygonal structure or a sawtooth structure, as described above, it is possible to adjust the coupling angle of the putter head 20 having the hitting member 30 coupled thereto relative to the shaft 10, as shown in FIG. 6. In the case in which each of the lower end 12 and the coupling portion 21 has a microscale sawtooth structure, it is possible to adjust the angle of the putter head 20 in microscale.

[0057] The operation of the variable golf putter according to the first embodiment of the present disclosure configured as described above will be described.

[0058] A user selects a hitting member 30 having one of different hitting surfaces 34, e.g. a hitting member 30 having a spherical hitting surface 34A, and couples the selected hitting member to the upper surface 23 of the putter head 20, or selects a hitting member 30 having a planar hitting surface 34B, and couples the selected hitting member to the upper surface 23 of the putter head 20. That is, the user selects a hitting member 30 having a desired hitting surface 34, and couples the selected hitting member to the putter head 20 using the fastening bolt 40.

[0059] Subsequently, as shown in FIG. 8, the user may perform putting practice using the hitting member 30, since the hitting surface 34 protrudes in the hitting direction through the incision portion 26 more than the hitting surface 24 of the putter head 20 when the hitting member 30 is coupled to the putter head 20.

[0060] The user may couple the hitting member 30 having the spherical hitting surface 34A to the putter head 20, or may select the hitting member 30 having the planar hitting surface 34B and may couple the selected hitting member to the putter head 20, whereby it is possible to efficiently perform putting practice using various hitting surfaces.

[0061] In addition, since the seating surface of the hitting member 30 is seated on the upper surface 23 of the putter head 20, the supporting surface 32A is supported by the edge of the upper surface 23, and the fastening bolt 40 is fastened to the coupling recess 32V through the through hole 22, a coupling state between the hitting member 30 and the putter hand 20 is securely maintained. Furthermore, the hitting member 30 does not move freely at the time of putting practice, and, since the supporting surface 32A is supported by the edge 23A of the upper surface 23, stable hitting is possible without free movement at the time of hitting a golf ball.

[0062] In particular, since a hitting material 39 made of a different material than the hitting member 30 is provided integrally at the hitting surface 34, it is possible to provide various hitting sensations and hitting sounds to the user.

[0063] Among the accompanying drawings, FIGS. 9 to 12 are views showing a variable golf putter according to a second embodiment of the present disclosure. FIG. 13 is a schematic plan view showing a use state of the variable golf putter shown in FIGS. 9 to 12.

[0064] As shown in FIGS. 9 to 13, the variable golf putter according to the second embodiment includes a putter head 20 coupled to the lower end 12 of a shaft 10, the putter head having a head hitting surface 24, and a hitting member 30 selectively coupled to the putter head 20.

[0065] A through hole 22, through which a fastening bolt 40 extends upwards from the bottom surface thereof, is formed in the putter head 20 so as to be stepped. An incision portion 26 configured to open a portion of the upper surface 23 of the putter head 20 in the hitting direction is formed in the central region of the head hitting surface 24 corresponding to the through hole 22, i.e. equivalent to the region in which the through hole 22 is formed. A triangular to octagonal coupling protrusion 27 protrudes upwards from the upper surface 23 in which the through hole 22 is formed.

[0066] The hitting member 30 is formed in a golf ball shape or a polygonal shape, and hitting surfaces 34 having different shapes and different sizes are formed on the outer surface of the hitting member. A seating surface 32, which is seated on the upper surface 23, is formed at the bottom surface of the hitting member. A triangular to octagonal coupling recess 32C is formed in the seating surface 32 such that the coupling protrusion 27 is inserted into and coupled to the coupling recess when the seating surface is seated on the upper surface 23, and has coupling surfaces 32C-1 having the same directions as the hitting surfaces 34. A screw fastening recess 32B, to which the fastening bolt 40 is coupled by fastening when the coupling protrusion 27 is inserted into the coupling recess, is formed in the coupling recess 32C.

[0067] The coupling protrusion 27 is inserted into and coupled to the coupling recess 32C in the state in which the orientation of the hitting member 30 is set such that a hitting surface 34 selected from among the hitting surfaces 34 of the hitting member 30 is exposed through the incision portion 26, and the fastening bolt 40 is fastened to the screw fastening recess 32B of the coupling recess 32C through the through hole 22. As the result of this procedure, the hitting member 30 is coupled to the putter head 20.

[0068] The hitting surface 34 of the hitting member 30 is constituted by a spherical hitting surface 34A having the same curvature as a golf ball or a planar hitting surface 34B. In the case in which the hitting surface of the hitting member is constituted by a planar hitting surface 34B, a plurality of hitting members 30 is provided by size of the planar hitting surface 34B, and is selectively coupled to the putter head 20. This embodiment is identical to the previous embodiment except that a hitting material 39 made of a material different from the material of the hitting member 30 is provided integrally at the spherical hitting surface 34A or the planar hitting surface 34B.

[0069] In this embodiment, the coupling protrusion 27 is described as being formed in a quadrangular shape. However, the present disclosure is not limited thereto, and the coupling protrusion may be formed in any one of triangular to octagonal shapes.

[0070] Since the coupling protrusion 27 is formed on the putter head 20, the coupling recess 32C is formed in the hitting member 30, and the hitting member 30 is coupled to the putter head via the coupling protrusion 27, as described above, it is possible to more stably maintain a coupling state between the hitting member and the putter head 20.

[0071] In the case in which the user selects the spherical hitting surface 34A, from between the spherical hitting surface 34A and the planar hitting surface 34B of the hitting member 30, the coupling protrusion 27 is inserted

into the coupling recess 32C of the hitting member 30 in such a manner that the coupling surface 32C-1 of the coupling recess 32C coinciding with the spherical hitting surface 34A faces the incision portion 26 such that the spherical hitting surface 34A is exposed through the incision portion 26, and then fastening is performed using the fastening bolt 40, whereby it is possible to achieve secure coupling and to select the hitting surface 34.

[0072] In other words, since the polygonal coupling recess 32C having the plurality of coupling surfaces 32C-1 having the same directions as the hitting surfaces 34 is formed in the hitting member 30 having the plurality of hitting surfaces 34 formed thereon, and the polygonal coupling protrusion 27 is formed on the upper surface 23 of the putter head 20, the user may select a preferred hitting surface 34, from among the plurality of hitting surfaces 34, and may couple the coupling protrusion 27 to the coupling recess 32C in such a manner that the coupling surface 32C-1 coinciding with the selected hitting surface 34 faces the incision portion 26 such that the selected hitting surface 34 is exposed through the incision portion 26. Consequently, it is possible for the user to perform hitting practice using the selected hitting surface 34.

[0073] Since a plurality of hitting surfaces 34 is formed on a single hitting member 30 and each hitting surface 34 is configured to have a simple structure and to be selectively used, as described above, it is possible for the user to select and use one of the hitting surfaces 34 having various shapes and sizes.

[0074] In addition, the size of the hitting surface 34 may be selected, and then the hitting member 30 may be coupled to the putter head 20, whereby it is possible to learn various hitting sensations.

[0075] Meanwhile, hitting material recesses 31 are formed in the hitting surface 34, a hitting material 39 made of a material different from the material of the hitting member 30 is provided integrally in the hitting material recesses 31, as in the previous embodiment. When the user performs hitting, therefore, it is possible to provide a hitting sensation and hitting sound other than when hitting is performed using a hitting member 30 made of a single kind of material.

[0076] Among the accompanying drawings, FIGS. 11 and 13 show another embodiment of the variable golf putter according to the second embodiment of the present disclosure shown in FIGS. 9 and 10.

[0077] As shown in FIGS. 9 and 13, a hitting member 30 according to another embodiment is identical to the hitting member according to the previous embodiment except that a thickness adjustment recess 37 configured to make the thicknesses of the hitting surfaces 34 different from each other is formed around the coupling recess 32C. That is, the thickness adjustment recess 37 is formed around the coupling recess 32C of the hitting member 30, and the thickness adjustment recess 37 is formed so as to have different widths W such that the hitting surfaces 34 have different thicknesses based on the coupling surfaces 32C-1. Here, the thickness of each of the hitting surfaces 34 means the thickness between each of the hitting surfaces 34 and a corresponding one of the coupling surfaces 32C-1.

[0078] As described above, the thickness adjustment recess 37 is formed so as to have different widths W such that the hitting surfaces 34 have different thicknesses. When the user selects one of the hitting surfaces 34 and hits a golf ball, therefore, it is possible to provide various hitting sensations and hitting sounds depending on the thickness of the hitting surface 34.

[0079] Among the accompanying drawings, FIG. 12 shows yet another embodiment of the variable golf putters according to the first to second embodiments of the present disclosure shown in FIGS. 3 to 9. As shown in FIG. 12, the variable golf putter has a seating recess 25 formed in the middle of the putter head 20 so as to be open in the hitting direction and in the upward direction, the seating recess 25 having a through hole 22 formed therethrough. This embodiment is identical to the previous embodiments except that, in the state in which a hitting member 30 having different shapes and sizes of hitting surfaces 34 is inserted into and seated in the seating recess 25, the hitting member 30 is integrally coupled to the putter head 20 via a fastening bolt 40 fastened to the bottom surface of the hitting member 30 through the through hole 22 from below. Here, the seating recess 25 is formed so as to have the same shape as the hitting member 30 such that the hitting member 30 is inserted into and stably seated in the seating recess.

[0080] Since the hitting member 30 is inserted into the seating recess 25 of the putter head 20 and is coupled to the putter head via the fastening bolt 40, as described above, it is possible to maintain a stable coupling state between the hitting member 30 and the putter head 20.

[0081] Among the accompanying drawings, FIG. 14 is a perspective view showing a variable golf putter according to a third embodiment of the present disclosure.

[0082] As shown in FIG. 14, the variable golf putter according to the third embodiment is identical to the variable golf putters according to the previous embodiments except that the variable golf putter includes a hitting member 30 having one end coupled to the lower end 12 of a shaft 10, wherein a hitting surface 34 configured to hit a golf ball is formed on one side of the hitting member, and a spherical or planar practice hitting surface 34-1 is formed on the other side of the hitting member. That is, the variable golf putter according to the third embodiment has a structure in which the lower end 12 of the shaft 10 is coupled to one end of the hitting member 30 having the hitting surface 34 and the practice hitting surface 34-1 formed on opposite sides thereof.

[0083] In addition, the lower end 12 of the shaft 10 is formed in a polygonal shape, and a polygonal coupling portion 33, to which the lower end 12 of the shaft 10 is coupled, is formed at the hitting member 30. The lower end 12 of the shaft 10 and the coupling portion 33 are coupled to each other through fastening using a bolt 40A

fastened from the bottom surface of the hitting member 30 in the state in which the lower end 12 of the shaft 10 is fitted in the coupling portion 33 such that the coupling angle therebetween is adjusted.

[0084] Meanwhile, although not shown in the figure, the hitting material 39 described above may be provided in the hitting surface 34 or the practice hitting surface 34-1.

[0085] Since the hitting member 30 is directly coupled to the shaft 10, as described above, it is not necessary to provide a separate putter head 20. In addition, since the hitting surface 34 is formed on one surface of the hitting member 30 and the practice hitting surface 34-1 is formed on the other surface of the hitting member, as described above, it is possible to provide convenience in which the user may hit a golf ball (putt) using the hitting surface 34 and may perform hitting practice using the practice hitting surface 34-1.

[0086] Among the accompanying drawings, FIG. 15 is an exploded perspective view showing a variable golf putter according to a fourth embodiment of the present disclosure, and FIG. 16 is a sectional view showing a coupling state of the variable golf putter shown in FIG. 15.

[0087] As shown in FIGS. 15 and 16, the variable golf putter according to the fourth embodiment includes a putter head 20 having a coupling bar 210, one end of which is coupled to the lower end 12 of a shaft 10, the coupling bar extending in a horizontal direction, and a hitting member 30 having a hitting surface 34 configured to hit a golf ball, the hitting surface being formed on one side thereof, and a spherical or planar practice hitting surface 34-1 formed on the other side thereof, the hitting member being coupled to the putter head 20 and having a polygonal coupling portion 33. The hitting member 30 is formed as a single body, and is coupled to the coupling bar 210 of the putter head 20. In addition, the lower end 12 of the shaft 10 is formed in a polygonal shape and is inserted into the coupling portion 33 of the hitting member 30, and a fastening bolt 40A, which is inserted into a fastening bolt through-hole 21A formed in the putter head 20, is fastened to a screw hole (not shown) formed in the inner circumferential surface of the lower end 12 fitted in the coupling portion 33. As a result, the shaft 10, the hitting member 30, and the putter head 20 are integrated. Of course, the lower end 12 and the putter head 20 may be coupled to each other through a fixing structure other than the fastening bolt 40A.

[0088] Meanwhile, in this embodiment, it is possible to adjust the coupling angle between the hitting member 30 and the shaft 10 based on the coupling angle between the lower end 12 and the coupling portion 33. That is, the angle at which the lower end 12 of the shaft 10 is inserted into the polygonal coupling portion 33 is adjusted, and then the bolt 40A is fastened to the lower end 12 from the lower surface of the putter head 20, whereby the coupling angle between the hitting member and the shaft 10 is set.

[0089] This embodiment is identical to the previous embodiments except for the coupling structure described above.

[0090] Here, a hitting material 39 made of a material different from the material of the hitting member 30 may be provided in the hitting surface 34 and the practice hitting surface 34-1, as previously described.

[0091] In addition, an insertion recess 35, into which the coupling bar 210 is inserted, is formed in the bottom surface of the hitting member 30, and the fastening bolt 40 is fastened to a screw hole formed in the insertion recess 35 of the hitting member 30 through the coupling bar 210 from the lower surface thereof in the state in which the coupling bar 210 is inserted in the insertion recess 35, whereby the hitting member 30 and the coupling bar 210 may be securely coupled to each other.

[0092] In addition, as previously described, the hitting member 30 is coupled to the coupling bar 210 of the putter head 20 through a fitting structure and a fastening structure, whereby it is possible to select and use various shapes and sizes of hitting members 30. Furthermore, since the hitting surface 34 is formed on one surface of the hitting member 30 and the practice hitting surface 34-1 is formed on the other surface of the hitting member, it is possible to provide convenience in which the user may hit (putt) a golf ball using the hitting surface 34 and may perform hitting practice using the practice hitting surface 34-1.

[0093] Among the accompanying drawings, FIG. 17 is an exploded perspective view showing another embodiment of the variable golf putter shown in FIG. 15.

[0094] As shown in FIG. 17, another embodiment of the variable golf putter shown in FIGS. 15 and 16 is identical to the fourth embodiment described above except that two to five hitting members 30 having different sizes and shapes are individually formed and are coupled to the coupling bar 210 such that the hitting surface 34 and the practice hitting surface 34-1 are selected. In this case, it is natural that insertion recesses 35, into which the coupling bar 210 is inserted so as to be coupled thereto, are formed in the bottom surfaces of the individual hitting members 30.

[0095] In the case in which the hitting members 30 are individually formed, as described above, the individual hitting members 30 may be made of different materials. Since the hitting members 30 are made of different materials, as described above, it is possible for the user to select a hitting member 30 made of a material that provides a desired hitting sensation and to perform hitting practice.

[0096] Since the hitting members 30 are individually formed so as to have different sizes and shapes, as shown in FIG. 17, it is possible to provide convenience in which the user may select a hitting member 30 according to personal preference and may perform hitting (putting) practice.

[0097] Meanwhile, as shown in FIGS. 18, 19, and 20, in the hitting member 30 according to the fourth embodiment described above, a hitting material 39 made of a

material different from the material of the hitting member 30 may be provided at the hitting surface 34.

[0098] For example, in the case in which the hitting member 30 is made of iron, the hitting material 39 may be made of copper or aluminum, whereby it is possible to provide various hitting sensations to the user. That is, hitting material recesses 31 are formed in the hitting surface 34 and the practice hitting surface 34-1, and the hitting material recesses 31 are filled with a metal material or a hard synthetic resin material different from the material of the hitting member 30, or the hitting material is integrally formed with the hitting member through insert injection molding. In particular, as shown in FIGS. 18 and 19, protrusions 31-1 may be formed on the bottoms of the hitting material recesses 31 formed in the hitting surface 34, and gaps between the protrusions 31-1, i.e. the hitting material recesses 31, may be filled with the hitting material 39 so as to be integrated, or the hitting material may be integrally formed with the hitting member through insert injection molding.

[0099] As described above, the hitting material 39 is provided integrally at the hitting surface 34 and the practice hitting surface 34-1. When the user hits a golf ball using the hitting surface having the hitting material 39, therefore, it is possible to obtain a hitting sensation and hitting sound different from when the user hits the golf ball using a hitting surface 34 made of only a single metal. According to this embodiment, it is possible to provide various hitting sensations and hitting sounds to the user.

[0100] Meanwhile, among the accompanying drawings, FIG. 20 is a view showing another embodiment of the hitting member shown in FIG. 17.

[0101] As shown in FIG. 20, this embodiment is identical to the previous embodiments except that, in the case in which the hitting member 30 is formed so as to have a spherical shape (a spherical surface) and a practice hitting surface 34 is formed at the outer circumference 34-3 of the spherical shape, a spherical hitting portion 34-2 having curvature smaller than the curvature of the outer circumference 34-3 of the hitting member 30 is formed at the practice hitting surface 34, and an auxiliary hitting surface 34-5 is formed at the spherical hitting portion 34-2.

[0102] That is, in the case in which the spherical hitting portion 34-2, which has small curvature, is formed at the practice hitting surface 34 of the outer circumference 34-3 of the hitting member 30, and the auxiliary hitting surface 34-5 is formed at the spherical hitting portion 34-2, whereby the distance between the center of the insertion recess 35 and an imaginary hitting surface is preset, it is possible to increase or decrease the area of the auxiliary hitting surface 34-5. That is, in the case in which the distance between the center of the insertion recess 35 and the imaginary hitting surface is preset, it is possible to form a hitting member 30 configured such that the area of the hitting surface is increased or to form a hitting member 30 configured such that the area of the hitting surface is decreased without changing the distance between the center of the insertion recess 35 and the imaginary hitting surface.

[0103] In other words, in the case in which the distance between the center of the insertion recess 35 and the imaginary hitting surface is preset at the time of manufacture of the hitting member 30, the spherical hitting portion 34-2 having curvature smaller than the curvature of the hitting member 30 is formed at the practice hitting surface 34 so as to be protrude, and the auxiliary hitting surface 34-5 is formed at the hitting region of the spherical hitting portion 34-2, as shown in FIG. 20. At this time, it is possible to increase or decrease the area of the auxiliary hitting surface 34-5 by increasing or decreasing the curvature of the spherical hitting portion 34-2. In the above structure, it is possible to obtain a hitting member 30 configured such that the auxiliary hitting surface 34-5 has different areas without changing the distance between the center of the insertion recess 35 and the imaginary hitting surface. This structure is shown in FIG. 20.

[0104] In addition, a decorative member J made of a jewel or a quasi-jewel, such as sapphire or cubic zirconia, in order to increase the value of the hitting member 30 and to improve visibility of the hitting member, may be provided at the upper surface of the hitting member 30. The decorative member J may have a screw portion configured to be fastened to a screw hole formed in the hitting member 30 such that the decorative member is coupled to the hitting member 30 through a fastening structure, or may be coupled to the hitting member through a separate coupling structure.

[0105] Among the accompanying drawings, FIG. 21 is an exploded perspective view showing a variable golf putter according to a fifth embodiment of the present disclosure, FIG. 22 is a sectional view showing a coupling state of the variable golf putter shown in FIG. 21, and FIG. 23 is a plan view showing a use state of the variable golf putter shown in FIG. 21.

[0106] As shown in FIGS. 21 to 23, the variable golf putter according to the fifth embodiment is identical to the variable golf putters according to the previous embodiments described above except for the following construction.

[0107] That is, the variable golf putter includes a putter head 200 coupled to the lower end 12 of a shaft 10, wherein the putter head 200 includes a first hitting member 300A which is formed in a spherical shape, such as a golf ball shape, and to which the lower end of the shaft 10 is coupled, a second hitting member 300B which is formed in a spherical shape, such as a golf ball shape, and which is coupled to the side surface of the first hitting member 300A in a horizontal direction so as to be located on a straight line together with the first hitting member 300A, a third hitting member 300C which is formed in a spherical shape, such as a golf ball shape, and which is coupled to the side surface of the second hitting member 300B in the horizontal direction so as to be located on a straight line together with the first hitting member 300A and the second hitting member 300B, and a coupling rod

400 having one end to which a nut is fastened after the coupling rod extends through the first hitting member 300A, the second hitting member 300B, and the third hitting member 300C and the other end to which the shaft 10 is fastened, the coupling rod being configured to integrate the first hitting member 300A, the second hitting member 300B, and the third hitting member 300C.

[0108] In addition, a spherical hitting surface 320 having the same curvature as a golf ball and planar hitting surfaces 340 are formed at each of the first hitting member 300A, the second hitting member 300B, and the third hitting member 300C, wherein the planar hitting surfaces 340 are formed so as to have different sizes. That is, the outer circumferential surface of each of the hitting members 300A, 300B, and 300C is divided into four parts such that one of the parts constitutes a spherical hitting surface 320 and the other parts constitute planar hitting surfaces 340 having different sizes. The reason that a single hitting member is formed so as to have a plurality of different hitting surfaces as described above is that it is necessary to allow a user to select and use hitting surfaces having various sizes and shapes (a spherical shape or a planar shape).

[0109] The first hitting member 300A, the second hitting member 300B, and the third hitting member 300C are made of different materials, and a hitting material 390 made of a material different from the materials of the first hitting member 300A, the second hitting member 300B, and the third hitting member 300C is provided integrally at the spherical hitting surface 320 and the planar hitting surfaces 340, wherein hitting material recesses 310 formed in the spherical hitting surface 320 and the planar hitting surfaces 340 are filled with the hitting material 390, or the hitting material is integrally formed with the hitting members through insert injection molding.

[0110] In addition, a position changing means 500 configured to change positions of the second hitting member 300B and the third hitting member 300C, to select the spherical hitting surface 320 and the planar hitting surfaces 340, and to change the hitting surfaces 320 and 340 depending on whether the user is a right-handed person or a left-handed person is provided at each of the first hitting member 300A, the third hitting member 300C, and opposite surfaces of the second hitting member 300B that face the first hitting member 300A and the third hitting member 300C.

[0111] The position changing means 500 includes a triangular to octagonal connection and coupling member 510 having a predetermined length and a triangular to octagonal positioning recess 520 formed in a corresponding one of the opposite surfaces of the first hitting member 300A, the second hitting member 300B, and the third hitting member 300C such that the connection and coupling member 510 is coupled to the positioning recess 520 by insertion.

[0112] In this embodiment, the polygonal connection and coupling member 510 and the polygonal positioning recess 520 are described as being formed so as to have a quadrangular shape, and the minimum number of connection and coupling members 510 is two. The reason for this is that other hitting members are connected and coupled to opposite surfaces of a middle hitting member.

[0113] The first hitting member 300A, the second hitting member 300B, and the third hitting member 300C may be made of the same material as a golf ball, or may be made of a metal material or a synthetic resin material.

[0114] In addition, each of the connection and coupling members 510 has a through hole, through which the coupling rod 400 extends.

[0115] The operation of the variable golf putter according to the fifth embodiment configured as described above will be described.

[0116] As shown in FIGS. 21 to 23, in the state in which the shaft 10 is coupled to the first hitting member 300A, the second hitting member 300B is located at one side of the first hitting member 300A, and the third hitting member 300C is located at one side of the second hitting member 300B, one end of a connection and coupling member 510A is coupled to the positioning recess 520 of the first hitting member 300A by insertion, and the other end of the connection and coupling member is coupled to the positioning recess 520 formed in one surface of the second hitting member 300B by insertion. In addition, one end of another connection and coupling member 510B is coupled to the positioning recess 520 formed in the other surface of the second hitting member 300B by insertion, and the other end of the connection and coupling member is coupled to the positioning recess 520 formed in one surface of the third hitting member 300C by insertion.

[0117] Subsequently, the coupling rod 400 extends through the first hitting member 300A, the first connection and coupling member 510A, the second hitting member 300B, the second connection and coupling member 510B, and the third hitting member 300B. Thereafter, nuts are fastened to the positioning recess 520 formed in the other surface of the third hitting member 300C and to the portion of the coupling rod 400 exposed in the positioning recess 520 formed in the other surface of the first hitting member 300A to integrate the first, second, and third hitting members 300A, 300B, and 300C.

[0118] In this state, as shown in FIG. 23, a right-handed user may perform putting practice using a putter having the putter head 200 including the first, second, and third hitting members 300A, 300B, and 300C. At this time, the spherical hitting surface 320 or the planar hitting surface 340 of the middle hitting member is used as a hitting surface configured to hit a golf ball.

[0119] Meanwhile, in order to select the spherical hitting surface 320 from among the hitting surfaces 320 and 340, the user unfastens the nuts, by which the first, second, and third hitting members 300A, 300B, and 300C are integrated, from the coupling rod 40, separates the connection and coupling members 510A and 510B from the middle hitting member, i.e. the second hitting member 300B, rotates the second hitting member 300B such that

the spherical hitting surface 320 is oriented in the hitting direction, and fastens the nuts to opposite ends of the coupling rod 40 as described above to integrate the first, second, and third hitting members 300A, 300B, and 300C again.

[0120] In the case in which the user is a left-handed person, the user may perform hitting after changing the hitting direction, as shown in FIG. 24. That is, since the spherical and planar hitting surfaces 320 and 340 are formed on a plurality of surfaces of each of the hitting members 300B and 300C, the left-handed user may hold a club, and may perform hitting in the state of changing the hitting direction.

[0121] In the golf putter for practice according to this embodiment, as described above, the hitting surface may be selected by selecting the hitting members 300B and 300C. Consequently, it is possible to more efficiently perform putting practice using various hitting surfaces 320 and 340. In particular, the hitting surfaces 320 and 340 are formed in opposite directions such that the hitting direction is not fixed to one side, whereby the left-handed user as well as the right-handed user may easily perform putting practice.

[0122] In addition, a hitting material 390 made of a material different from the materials of the hitting members 300B and 300C is provided in the spherical hitting surface 320 and the planar hitting surfaces 340, and therefore it is possible to provide various hitting sensations to the user at the time of hitting practice.

[0123] Among the accompanying drawings, FIG. 25 is an exploded perspective view showing a variable golf putter according to a sixth embodiment of the present disclosure. FIG. 26 is a perspective view showing a coupling state of the variable golf putter shown in FIG. 25. FIG. 27 is a sectional view taken along line A-A of FIG. 26.

[0124] As shown in FIGS. 25 to 27, the variable golf putter according to the sixth embodiment includes a putter head 20 having a shaft coupling hole 21, to which the lower end 12 of a shaft 10 is coupled, and a head hitting surface 24 and a hitting member selectively coupled to the putter head 20.

[0125] A through hole 22, through which a fastening bolt 40 extends upwards from the bottom surface thereof, is formed in the putter head 20 so as to be stepped. An incision portion 26 configured to open a portion of the upper surface 23 of the putter head 20 in the hitting direction is formed in the central region of the head hitting surface 24 corresponding to the through hole 22. A coupling portion 23A is formed around the through hole 22. The coupling portion 23A has a quadrangular section.

[0126] Shaft coupling holes 21 of the putter head 20 are formed in opposite sides of the putter head 20 such that a right-handed person or a left-handed person selects one of the shaft coupling holes and couples the shaft 10 to the selected shaft coupling hole. The lower end 12 of the shaft 10 and the shaft coupling hole 21 may be formed in a polygonal shape or may be formed so as to be coupled to each other through spline coupling, whereby the coupling angle between the putter head 20 and the shaft 10 may be adjusted.

[0127] A hitting surface 34 may be formed at one or each of the outer surfaces of the hitting member 30. In this embodiment, however, a description will be given on the assumption that a hitting surface 34 is formed at one surface of the hitting member and an auxiliary hitting surface 34 is formed at the other surface of the hitting member. A coupling recess H, to which the coupling portion 23A is coupled by insertion, is formed in the bottom surface of the hitting member so as to be open downwards. A screw fastening recess HI, to which a fastening bolt 40 is fastened, is formed in the bottom surface of the coupling recess H.

[0128] A hitting sound generation recess 34-4 configured to generate a hitting sound when a golf ball is hit by the entirety of the hitting surface 34 or the region of the hitting surface 34 corresponding to a positive hitting point P is formed in the hitting member 30. As shown in FIGS. 27 and 28, the hitting sound generation recess 34-4 may be formed in a region corresponding to the hitting surface 34 or the region of the hitting surface 34 corresponding to the positive hitting point P so as to be open toward the bottom, the side, or the top of the hitting member 30 or toward a coupling recess 35. Preferably, the hitting sound generation recess is open toward the bottom of the hitting member 30.

[0129] The reason that the hitting sound generation recess 34-4 is formed in the hitting member 30 as described above is that a bright hitting sound is generated when a golf ball is hit at the positive hitting point P and a dull hitting sound is generated when the golf ball is hit by the region of the hitting member deviating from the positive hitting point P, whereby it is possible to audibly determine and recognize whether correct hitting has been performed.

[0130] Although not shown in the figures, the hitting sound generation recess 34-4 may be filled with a hitting material made of a metal material or a synthetic resin material different from the material of the hitting member 30, the hitting material may be coupled to the hitting sound generation recess by insertion, or the hitting material may be integrally formed with the hitting member 30 through insert injection molding. Integration between the hitting material and the hitting member is performed in order to generate various hitting sounds.

[0131] In addition, as shown in FIGS. 20, 25, and 26, the hitting sound generation recess 34-4 may not be formed in the hitting member 30. That is, the hitting sound generation recess 34-4 may be selectively formed as needed.

[0132] The hitting member 30 may be formed in the shape of a sphere, a hemisphere, a quadrangle, or a combination of a polygon, including a quadrangle, and a sphere.

[0133] The hitting member 30 and the putter head 20 configured as described above are coupled to each other through the following structure. That is, the fastening bolt

40 is fastened to the screw fastening recess H1 through the through hole 22 in the state in which the coupling portion 23A is inserted into and coupled to the coupling recess H such that the hitting surface 34 or the auxiliary hitting surface 34-6 protrudes through the incision portion 26 more than the head hitting surface 24 or coincides with the head hitting surface 24, whereby the hitting member 30 is replaceably coupled to the putter head 20.

[0134] In a hitting member 30 according to another embodiment, as shown in FIGS. 25 to 27, a mark C configured to indicate the hitting direction is formed on the outer circumferential surface of the hitting member 30 in the form of a plurality of recesses or a line. The user may recognize the putting direction through the mark C at the time of putting. To this end, the marks C are formed in a line.

[0135] In a hitting member 30 according to yet another embodiment, as shown in FIGS. 25 to 27, a decorative member J1 made of a jewel or a quasi-jewel is provided at the upper surface of the hitting member. A portion of the decorative member J1 may be coupled to an insertion recess formed in the center of the upper surface of the hitting member 30 by insertion, or a male-screw fastening portion provided at the decorative member J1 may be coupled to a screw hole formed in the upper surface of the hitting member by fastening. This structure is configured to easily replace or exchange the decorative member J1. In this case, the decorative member J1 may be coupled to the recess-shaped mark C, or may be formed at a position other than the mark C.

[0136] Also, in the case in which the hitting member 30 is formed so as to have the shape of a sphere, a hemisphere, or a combination of a polygon and a sphere, the total size (diameter) of the hitting member is set, a hitting position P2 for hitting is formed at the outer circumference of the sphere, and the distance L between the center P1 of the hitting member 30 and the hitting position P2 is preset, a hemispherical auxiliary member 34-6 is formed at the hitting surface 34 formed at the outer circumference thereof so as to protrude and an auxiliary hitting surface 34-5 is formed at the hemispherical auxiliary member 34-6 such that the area of the hitting surface is increased or decreased, as shown in FIGS. 25 to 27.

[0137] That is, in the case in which the distance L between the center P1 of the hitting member 30 and the hitting position P2 is preset and the size of the hitting member 30 is preset, as shown in FIG. 27, it is not possible to increase or decrease the area of the hitting surface 34 formed at the outer circumference of the sphere. In order to solve this, the hemispherical auxiliary member 34-6 is formed at the hitting surface 34 formed at the outer circumference of the sphere so as to protrude. In addition, the auxiliary hitting surface 34-5 is formed at the outer circumference of the auxiliary member 34-6 corresponding to the hitting position P2 so as to be flat.

[0138] In other words, in order to form a hitting member 30 configured such that the area of the auxiliary hitting surface 34-5 is large, the size of the auxiliary member 34-6 is increased such that the auxiliary hitting surface 34-5 is formed at the top region (hitting position) of the auxiliary member 34-6 so as to have a large area. In order to form a hitting member 30 configured such that the area of the auxiliary hitting surface 34-5 is small, the size of the auxiliary member 34-6 is decreased, and the auxiliary hitting surface 34-5 is formed at the top region (hitting position) of the auxiliary member 34-6 so as to have a small area. Through the above procedures, hitting members 30 including auxiliary hitting surfaces 34-5 having different sizes (areas) may be provided.

[0139] That is, it is possible to obtain a hitting member 30 configured such that the area of the auxiliary hitting surface 34-5 is large by increasing the area of the auxiliary hitting surface 34-5 or to obtain a hitting member 30 configured such that the area of the auxiliary hitting surface 34-5 is small by decreasing the area of the auxiliary hitting surface 34-5 without changing the distance L between the hitting position P2 for hitting and the center P1 of the hitting member 30.

[0140] It is obvious to a person having ordinary skill in the art that, although the specific embodiments of the present disclosure have been shown and described above, the present disclosure is not limited to the described embodiments and various changes and modifications are possible without departing from the idea and scope of the present disclosure. Thus, it is intended that the changes or the modifications should not be understood independently of the technical spirit or prospect of the present disclosure and that modified embodiments fall within the scope of the claims of the present disclosure.

[Industrial Applicability]

[0141] The present disclosure is configured to selectively couple hitting members having various hitting areas to a putter head in order to perform hitting practice, and may provide various hitting sensations to a user. Consequently, the present disclosure is usefully applicable to the golf industry and thus has industrial applicability.

Claims

1. A variable golf putter comprising:

a putter head coupled to a lower end of a shaft, the putter head having a head hitting surface; and

a hitting member selectively coupled to the putter head, wherein

a through hole, through which a fastening bolt extends upwards from a bottom surface thereof, is formed in the putter head so as to be stepped, and an incision portion configured to open a portion of an upper surface of the putter head in a

hitting direction is formed in the head hitting surface corresponding to the through hole,
the hitting member is formed in a golf ball shape and has a hitting surface formed on an outer circumferential surface thereof, a seating surface and a supporting surface supported by an edge of the upper surface so as to be seated on the upper surface are formed at a bottom surface of the hitting member so as to be stepped, a screw fastening recess, to which the fastening bolt is coupled by fastening, is formed in the seating surface, and the hitting member is replaceably coupled to the putter head via the fastening bolt in a state of being seated on the surface such that a portion of the hitting surface protrudes through the incision portion more than the head hitting surface,
the hitting surface of the hitting member is constituted by a spherical hitting surface having identical curvature to a golf ball or a planar hitting surface, and, in a case in which the hitting surface is constituted by a planar hitting surface, a plurality of hitting members is provided by area of the planar hitting surface and is selectively coupled to the putter head.

2. A variable golf putter comprising:

a putter head coupled to a lower end of a shaft, the putter head having a head hitting surface; and
a hitting member selectively coupled to the putter head, wherein
a through hole, through which a fastening bolt extends upwards from a bottom surface thereof, is formed in the putter head so as to be stepped,
an incision portion configured to open a portion of an upper surface of the putter head in a hitting direction is formed in the head hitting surface corresponding to the through hole, and a triangular to octagonal coupling protrusion protrudes upwards from the upper surface in which the through hole is formed,
the hitting member is formed in a golf ball shape or a polygonal shape, hitting surfaces having different shapes and different sizes are formed on an outer surface of the hitting member, a seating surface, which is seated on the upper surface, is formed at a bottom surface of the hitting member, a triangular to octagonal coupling recess is formed in the seating surface such that the coupling protrusion is inserted into and coupled to the coupling recess when the seating surface is seated on the upper surface, and has coupling surfaces having identical directions to the hitting surfaces, and a screw fastening recess, to which the fastening bolt is coupled by fastening, is formed in the coupling recess,
the coupling protrusion is coupled to the coupling recess in a state in which an orientation of the hitting member is set such that a hitting surface selected from among the hitting surfaces is exposed through the incision portion, and the fastening bolt is coupled to the screw fastening recess of the coupling recess through the through hole by fastening, and
the hitting surface of the hitting member is constituted by a spherical hitting surface having identical curvature to a golf ball or a planar hitting surface, and, in a case in which the hitting surface is constituted by a planar hitting surface, a plurality of hitting members is provided by area of the planar hitting surface and is selectively coupled to the putter head.

3. The variable golf putter according to claim 1 or 2, wherein a hitting material made of a material different from a material of the hitting member is provided integrally at the spherical hitting surface or the planar hitting surface, and a hitting material recess formed in the spherical hitting surface or the planar hitting surface is filled with the hitting material, or the hitting material is integrally formed with the hitting member through insert injection molding.

4. The variable golf putter according to claim 1 or 2, wherein the lower end of the shaft is formed in a polygonal shape, polygonal coupling portions, to each of which the lower end of the shaft is coupled, are formed at opposite sides of the putter head such that one of the polygonal coupling portions is selected and used by a left-handed person or a right-handed person, and the lower end of the shaft and the coupling portion are coupled to each other via a bolt fastened from a bottom surface of the putter head in a state in which the lower end of the shaft is fitted in the coupling portion such that a coupling angle therebetween is adjusted.

5. The variable golf putter according to claim 2, wherein a thickness adjustment recess is formed around the coupling recess of the hitting member, and the thickness adjustment recess is formed so as to have different widths such that the hitting surfaces have different thicknesses based on the coupling surfaces, whereby different hitting sensations and hitting sounds are generated.

6. A variable golf putter comprising:

a putter head having a coupling bar, one end of which is coupled to a lower end of a shaft, the coupling bar extending in a horizontal direction; and
a hitting member having a hitting surface configured to hit a golf ball, the hitting surface being

formed on one side thereof, and a spherical or planar practice hitting surface formed on the other side thereof, the hitting member being coupled to the putter head, wherein
the hitting member is formed as a single body or is divided into two or five parts having different sizes and shapes such that the hitting surface and the practice hitting surface are selected, the hitting member being coupled to the coupling bar, and
the lower end of the shaft is formed in a polygonal shape, a polygonal coupling portion, to which the lower end of the shaft is coupled, is formed at the putter head, and the lower end of the shaft and the coupling portion are coupled to each other via a bolt fastened from a bottom surface of the putter head in a state in which the lower end of the shaft is fitted in the coupling portion such that a coupling angle therebetween is adjusted.

7. The variable golf putter according to claim 6, wherein a hitting material made of a material different from a material of the hitting member is provided integrally at the hitting surface and the practice hitting surface, and hitting material recesses formed in the hitting surface and the practice hitting surface are filled with the hitting material, or the hitting material is integrally formed with the hitting member through insert injection molding.

8. The variable golf putter according to claim 6, wherein, in a case in which the hitting member is divided, the divided hitting members are made of different materials.

9. The variable golf putter according to claim 6, wherein, in a case in which the practice hitting surface is formed in a spherical shape, a spherical hitting portion having curvature smaller than curvature of an outer circumferential surface of the hitting member is formed at the practice hitting surface, and a spherical hitting surface is formed at the spherical hitting portion.

10. A variable golf putter comprising:

a putter head coupled to a lower end of a shaft, wherein
the putter head comprises:

a first hitting member which is formed in a spherical shape having a golf ball shape and to which the lower end of the shaft is coupled, a second hitting member which is formed in a spherical shape having a golf ball shape and which is coupled to a side surface of the first hitting member in a horizontal direction so as to be located on a straight line together with the first hitting member, and a third hitting member which is formed in a spherical shape having a golf ball shape and which is coupled to a side surface of the second hitting member in the horizontal direction so as to be located on a straight line together with the first hitting member and the second hitting member; and
a coupling rod having one end to which a nut is fastened after the coupling rod extends through the first hitting member, the second hitting member, and the third hitting member and the other end to which the shaft is fastened, the coupling rod being configured to integrate the first hitting member, the second hitting member, and the third hitting member,
a spherical hitting surface having identical curvature to a golf ball and planar hitting surfaces are formed at each of the first hitting member, the second hitting member, and the third hitting member, the planar hitting surfaces being formed so as to have different sizes,
the first hitting member, the second hitting member, and the third hitting member are made of different materials, and
a hitting material made of a material different from materials of the first hitting member, the second hitting member, and the third hitting member is provided integrally at the spherical hitting surface and the planar hitting surfaces, and hitting material recesses formed in the spherical hitting surface and the planar hitting surfaces are filled with the hitting material, or the hitting material is integrally formed with the hitting member through insert injection molding.

11. The variable golf putter according to claim 10, wherein
a position changing means configured to change positions of the second hitting member and the third hitting member, to select the spherical hitting surface and the planar hitting surfaces, and to change the hitting surfaces depending on whether a user is a right-handed person or a left-handed person is provided at each of the first hitting member, the third hitting member, and opposite surfaces of the second hitting member that face the first hitting member and the third hitting member, and
the position changing means comprises:

a polygonal connection and coupling member having a predetermined length; and
a polygonal positioning recess formed in a cor-

responding one of opposite surfaces of the first hitting member, the second hitting member, and the third hitting member such that the connection and coupling member is coupled to the positioning recess by insertion.

12. A variable golf putter comprising:

a hitting member having one end coupled to a lower end of a shaft, a hitting surface configured to hit a golf ball being formed on one side of the hitting member, a spherical or planar practice hitting surface being formed on the other side of the hitting member, wherein
the lower end of the shaft is formed in a polygonal shape, a polygonal coupling portion, to which the lower end of the shaft is coupled, is formed at the hitting member, and the lower end of the shaft and the coupling portion are coupled to each other via a bolt fastened from a bottom surface of the hitting member in a state in which the lower end of the shaft is fitted in the coupling portion such that a coupling angle therebetween is adjusted.

13. A variable golf putter comprising:

a putter head having a shaft coupling hole, to which a lower end of a shaft is coupled, and a head hitting surface; and
a hitting member selectively coupled to the putter head, wherein
a through hole, through which a fastening bolt extends upwards from a bottom surface thereof, is formed in the putter head so as to be stepped, an incision portion configured to open a portion of an upper surface of the putter head in a hitting direction is formed in the head hitting surface corresponding to the through hole, and a coupling portion is formed around the through hole, a hitting surface is formed at one or each of outer surfaces of the hitting member, a coupling recess, to which the coupling portion is coupled by insertion, is formed in a bottom surface of the hitting member so as to be open downwards, a screw fastening recess is formed in a bottom surface of the coupling recess, and the fastening bolt is fastened to the screw fastening recess through the through hole in a state in which the coupling portion is inserted into and coupled to the coupling recess such that the hitting surface protrudes through the incision portion more than the head hitting surface or coincides with the head hitting surface, whereby the hitting member is replaceably coupled to the putter head, and
a hitting sound generation recess configured to generate a hitting sound when a golf ball is hit by all the hitting surface or a region of the hitting surface corresponding to a positive hitting point is formed in the hitting member.

14. A variable golf putter comprising:

a putter head having a shaft coupling hole, to which a lower end of a shaft is coupled, and a head hitting surface; and
a hitting member selectively coupled to the putter head, wherein
a through hole, through which a fastening bolt extends upwards from a bottom surface thereof, is formed in the putter head so as to be stepped, an incision portion configured to open a portion of an upper surface of the putter head in a hitting direction is formed in the head hitting surface corresponding to the through hole, and a coupling portion is formed around the through hole, a hitting surface is formed at one or each of outer surfaces of the hitting member, a coupling recess, to which the coupling portion is coupled by insertion, is formed in a bottom surface of the hitting member so as to be open downwards, and a screw fastening recess is formed in a bottom surface of the coupling recess, and
the fastening bolt is fastened to the screw fastening recess through the through hole in a state in which the coupling portion is inserted into and coupled to the coupling recess such that the hitting surface protrudes through the incision portion more than the head hitting surface or coincides with the head hitting surface, whereby the hitting member is replaceably coupled to the putter head.

15. The variable golf putter according to claim 13, wherein the hitting sound generation recess is formed in a region corresponding to the hitting surface or a region of the hitting surface corresponding to the positive hitting point so as to be open toward a bottom, a side, or a top of the hitting member or toward the coupling recess.

16. The variable golf putter according to claim 15, wherein the hitting sound generation recess is filled with a metal material or a synthetic resin material different from a material of the hitting member, the metal material or the synthetic resin material is coupled to the hitting sound generation recess by insertion, or the metal material or the synthetic resin material is integrally formed with the hitting member through insert injection molding.

17. The variable golf putter according to claim 13 or 14, wherein the hitting member is formed in a shape of a sphere, a hemisphere, or a combination of a polygon and a sphere, and a mark configured to indicate

the hitting direction is formed on an outer circumferential surface of the hitting member in a form of a plurality of recesses or a line.

18. The variable golf putter according to claim 13 or 14, wherein a decorative member for decoration is provided at an upper surface of the hitting member, and a portion of the decorative member is coupled to the hitting member by insertion, or a fastening portion provided at the decorative member is coupled to a screw hole formed in the upper surface of the hitting member by fastening.

19. The variable golf putter according to claim 13 or 14, wherein shaft coupling holes of the putter head are formed in opposite sides of the putter head such that a right-handed person or a left-handed person selects one of the shaft coupling holes and couples the shaft to the selected shaft coupling hole.

20. The variable golf putter according to claim 13 or 14, wherein, in a case in which the hitting member is formed in a shape of a sphere, a hemisphere, or a combination of a polygon and a sphere, the hitting surface is formed at an outer circumference of the hitting member, and a distance between a center of the hitting member and a hitting position is preset, a hemispherical auxiliary member is formed at the hitting surface so as to protrude and an auxiliary hitting surface is formed at the hemispherical auxiliary member such that an area of the hitting surface is increased or decreased.

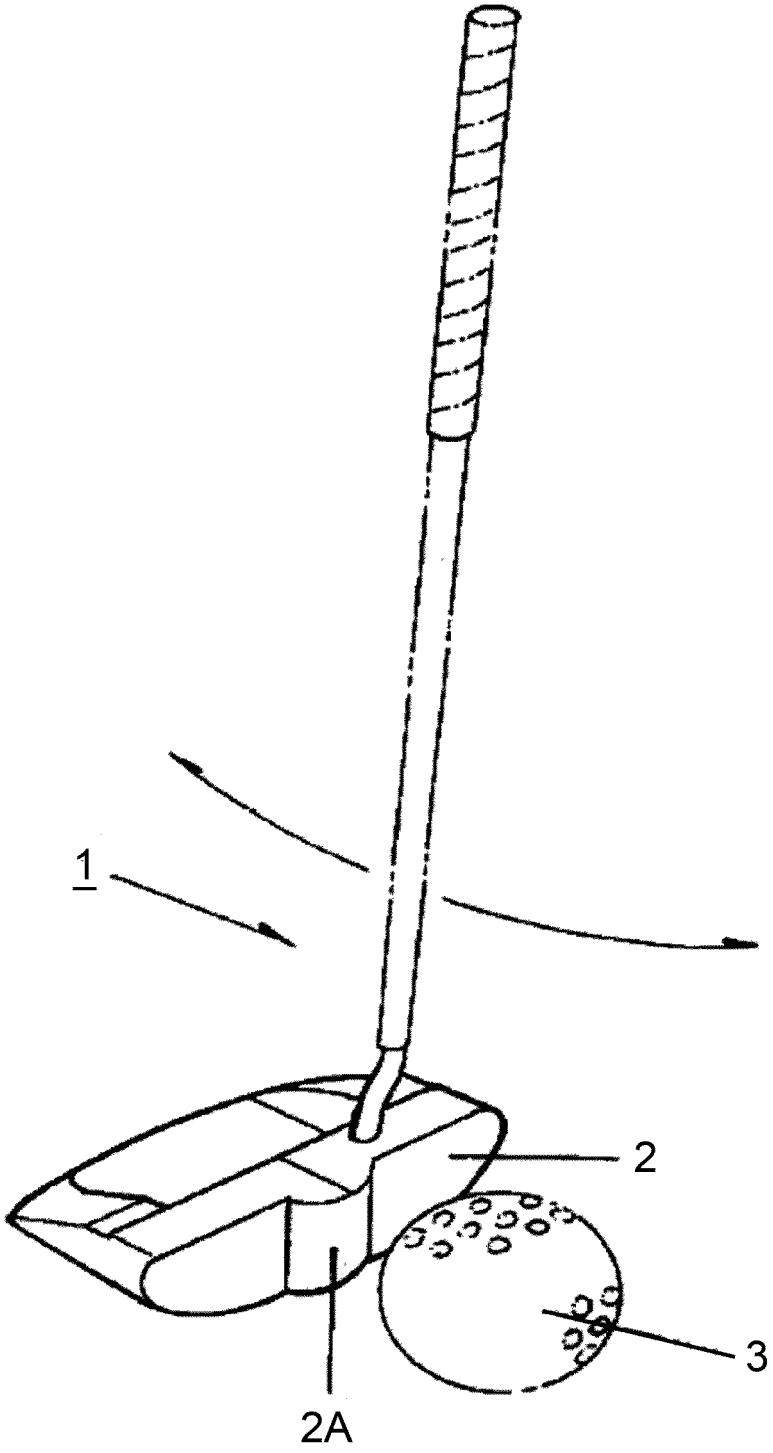

FIG.1

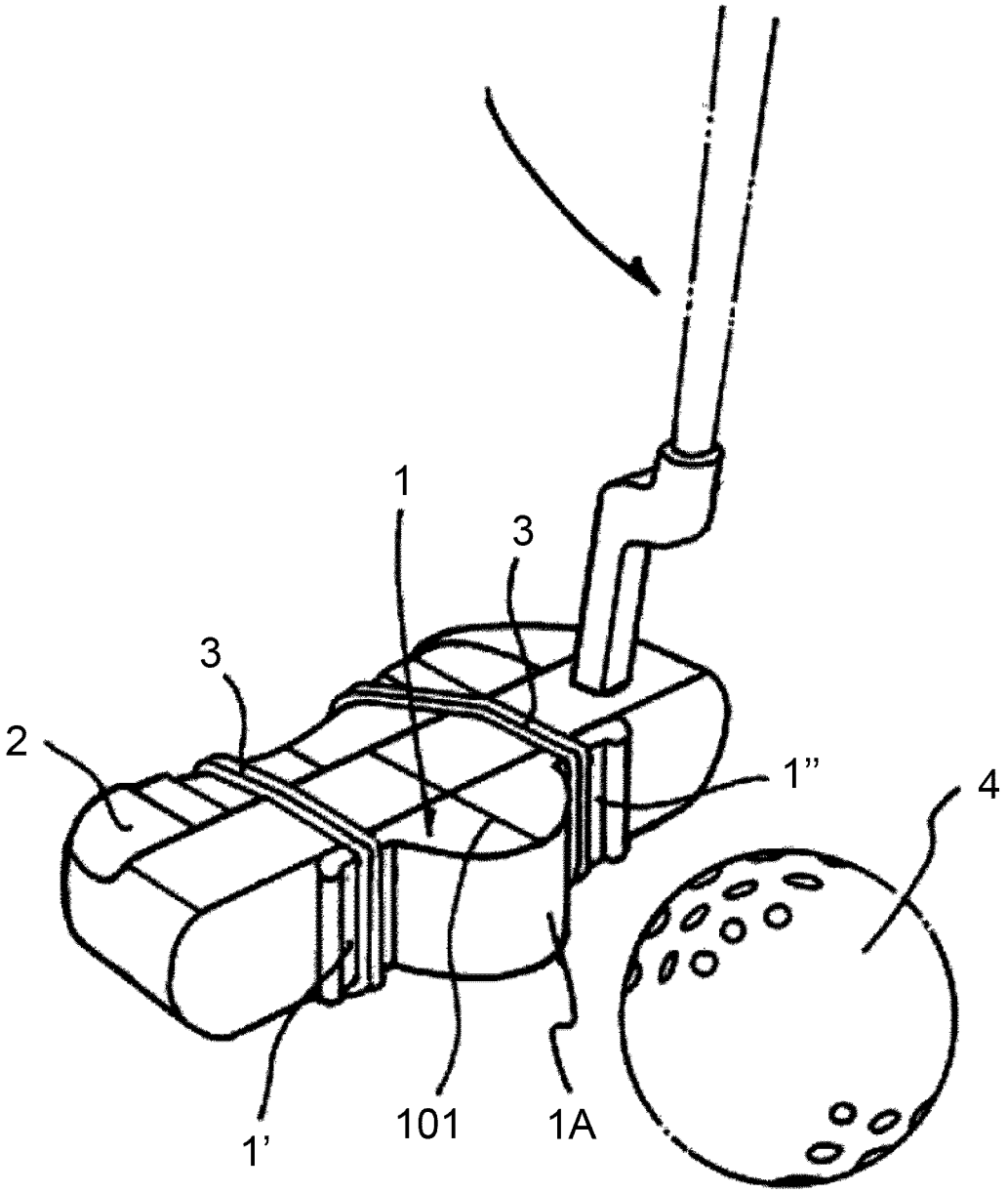

FIG.2

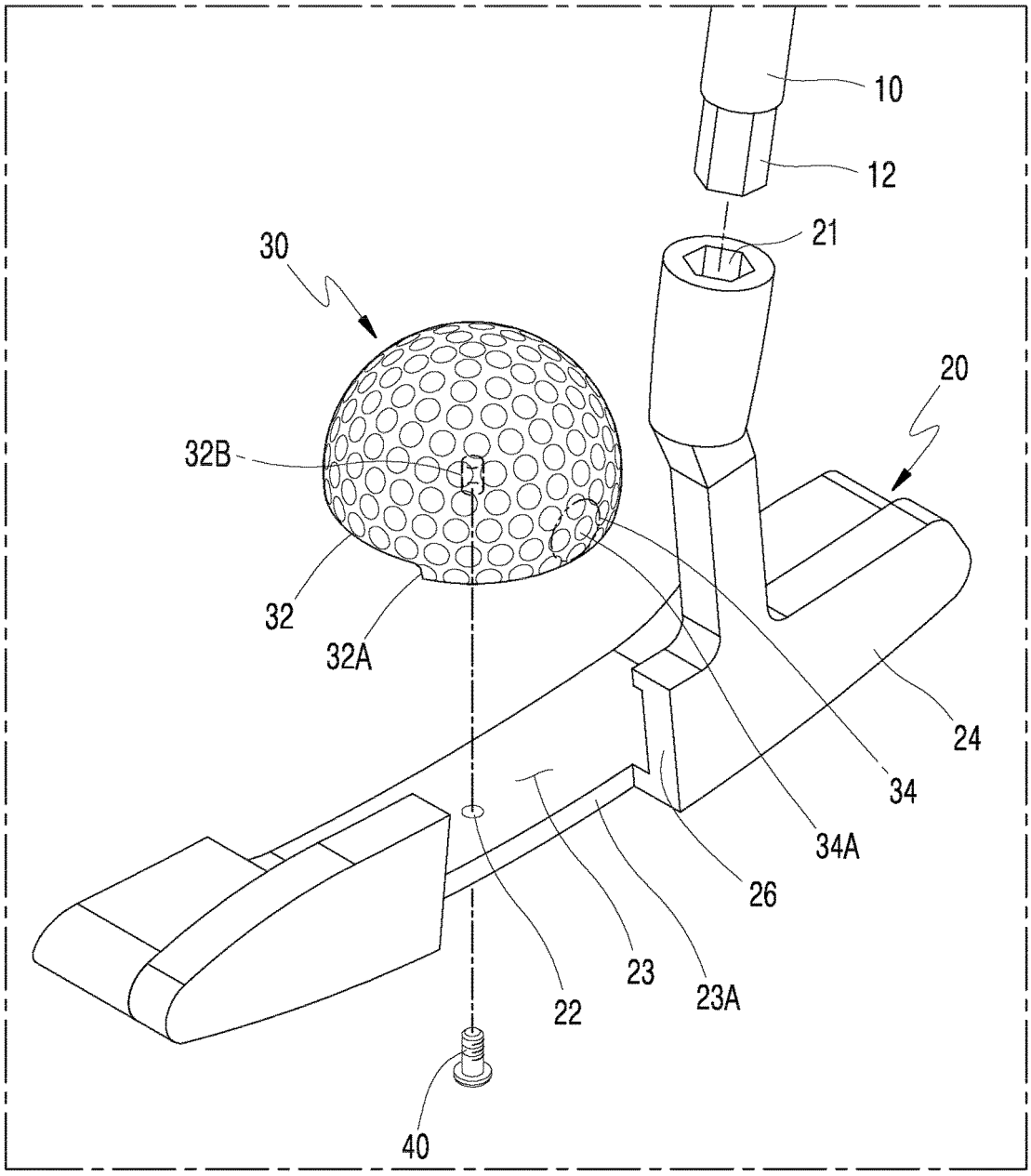

FIG.3

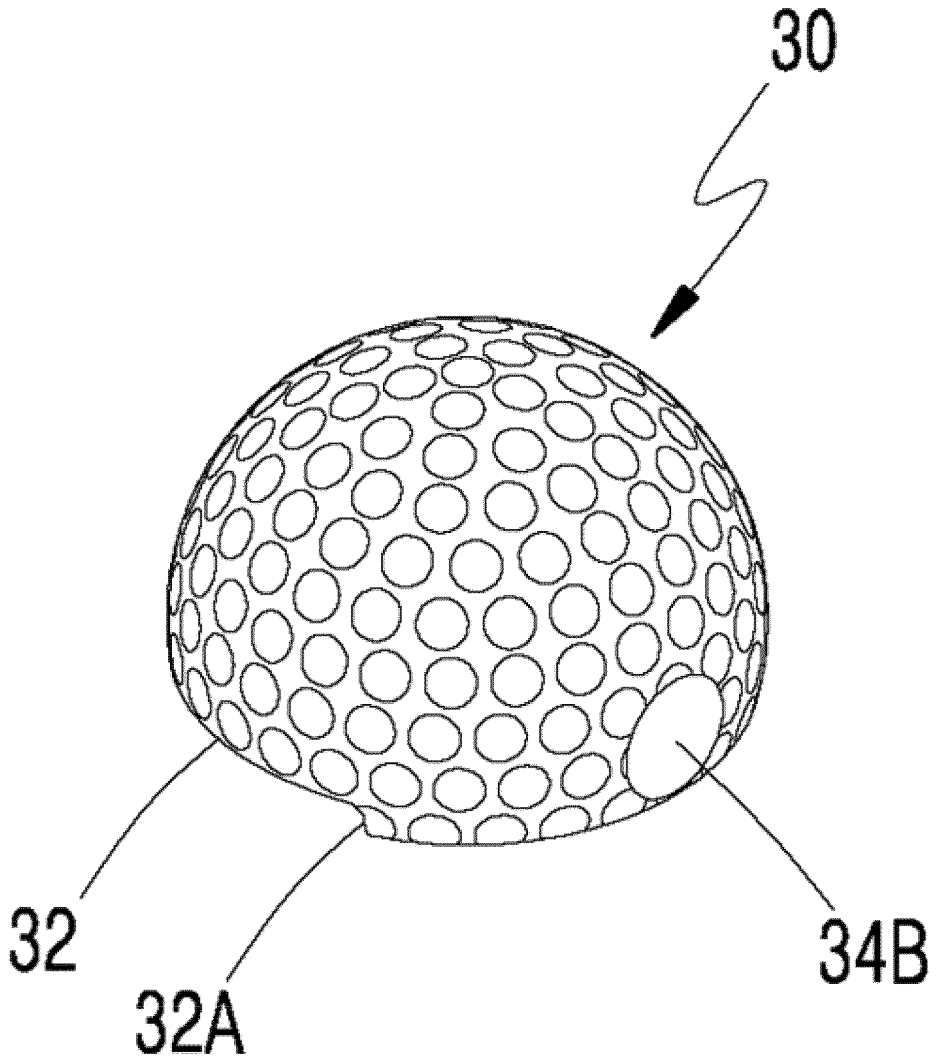

FIG.4

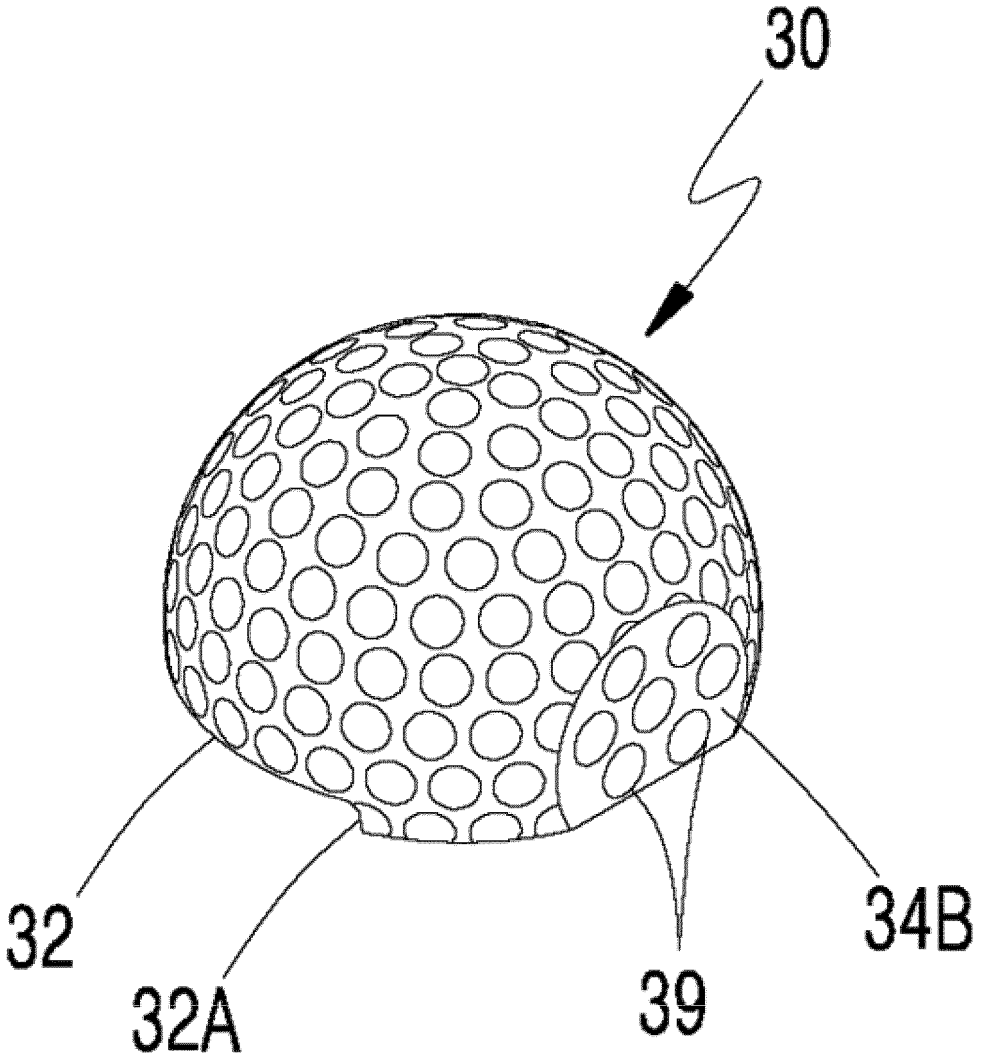

FIG.5

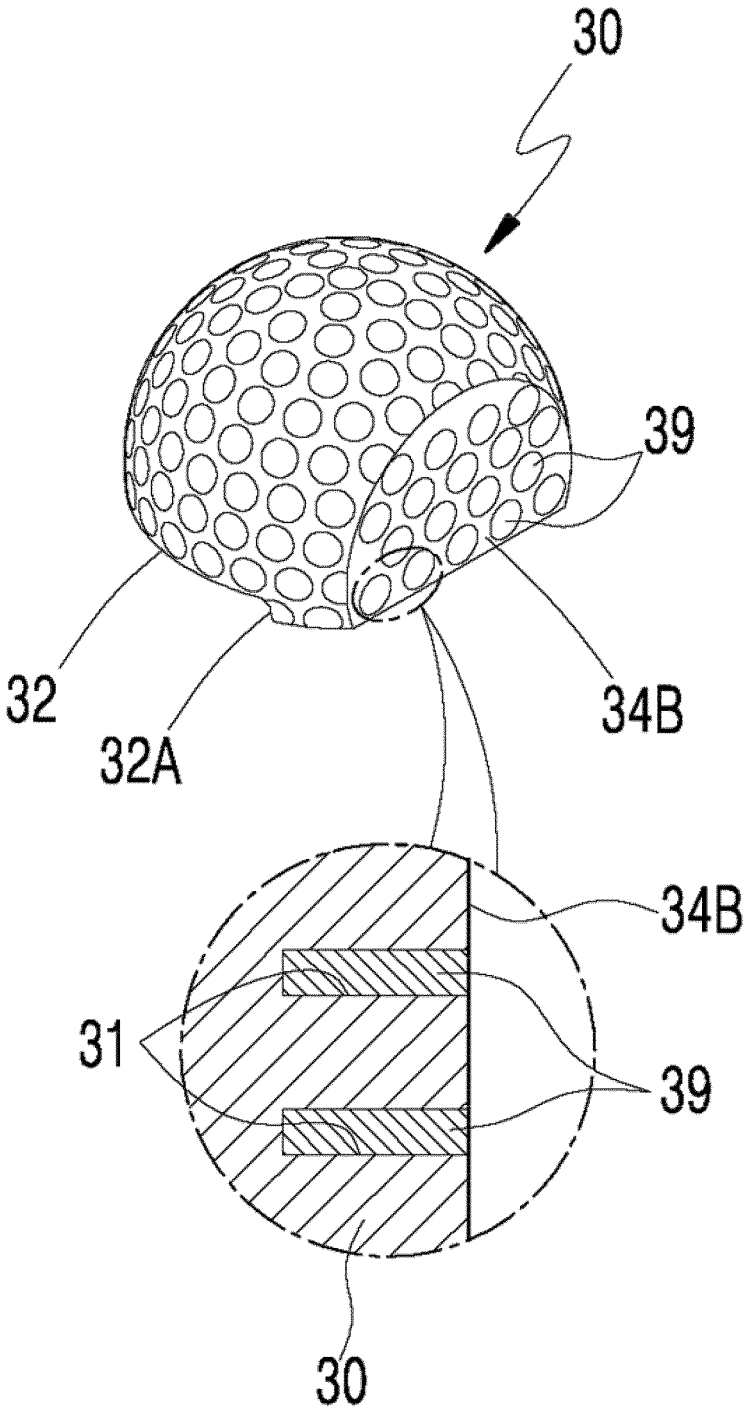

FIG.6

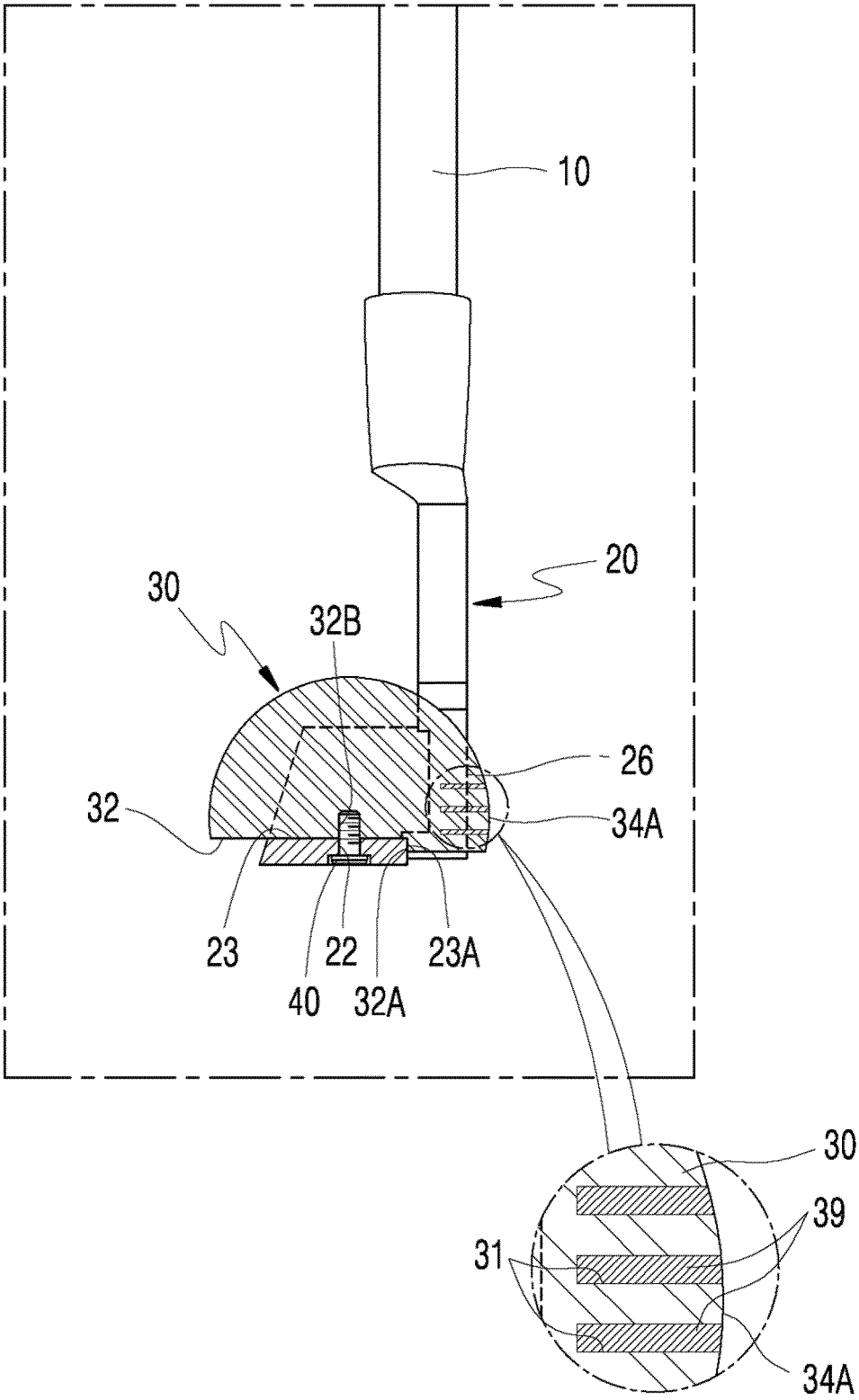

FIG.7

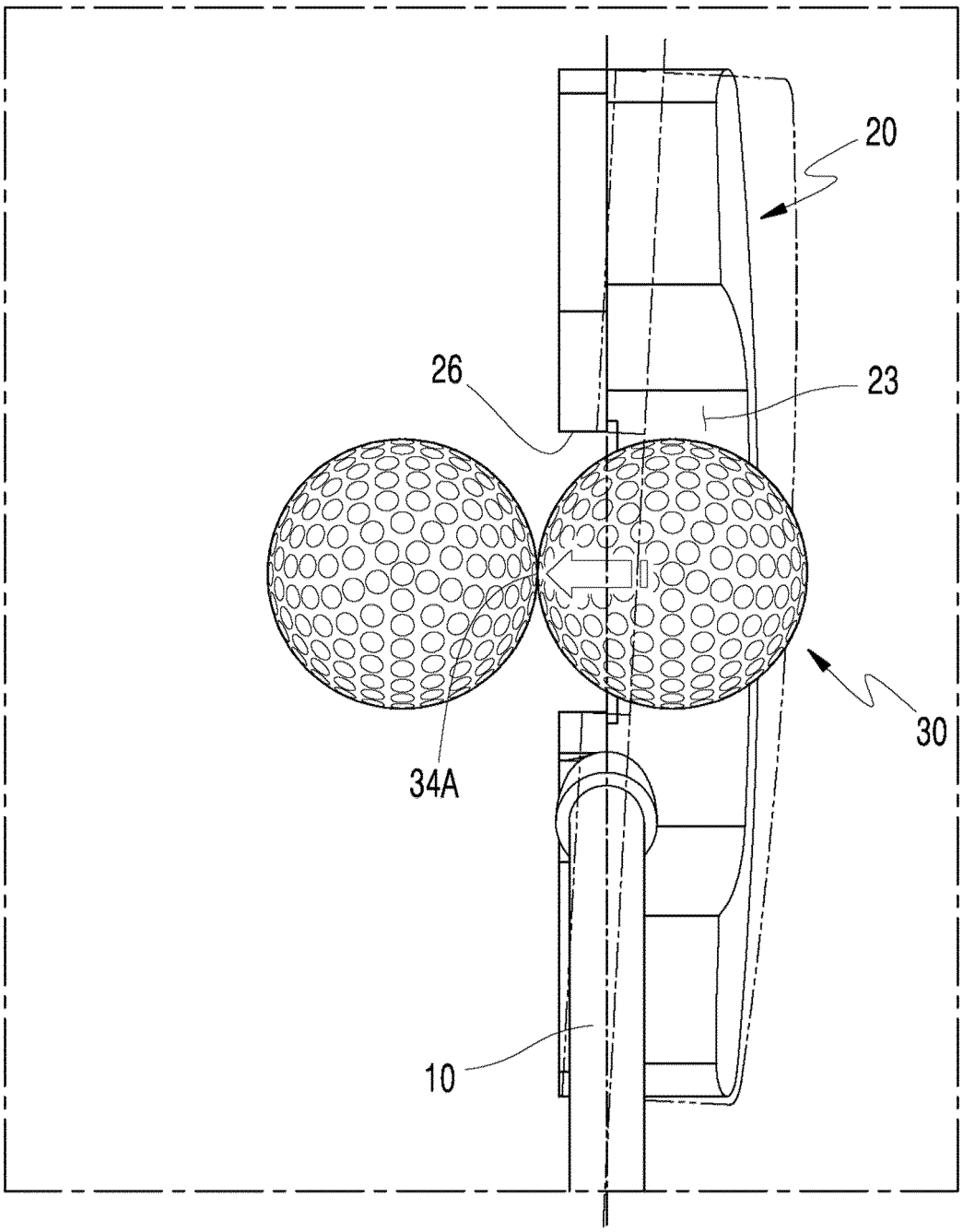

FIG.8

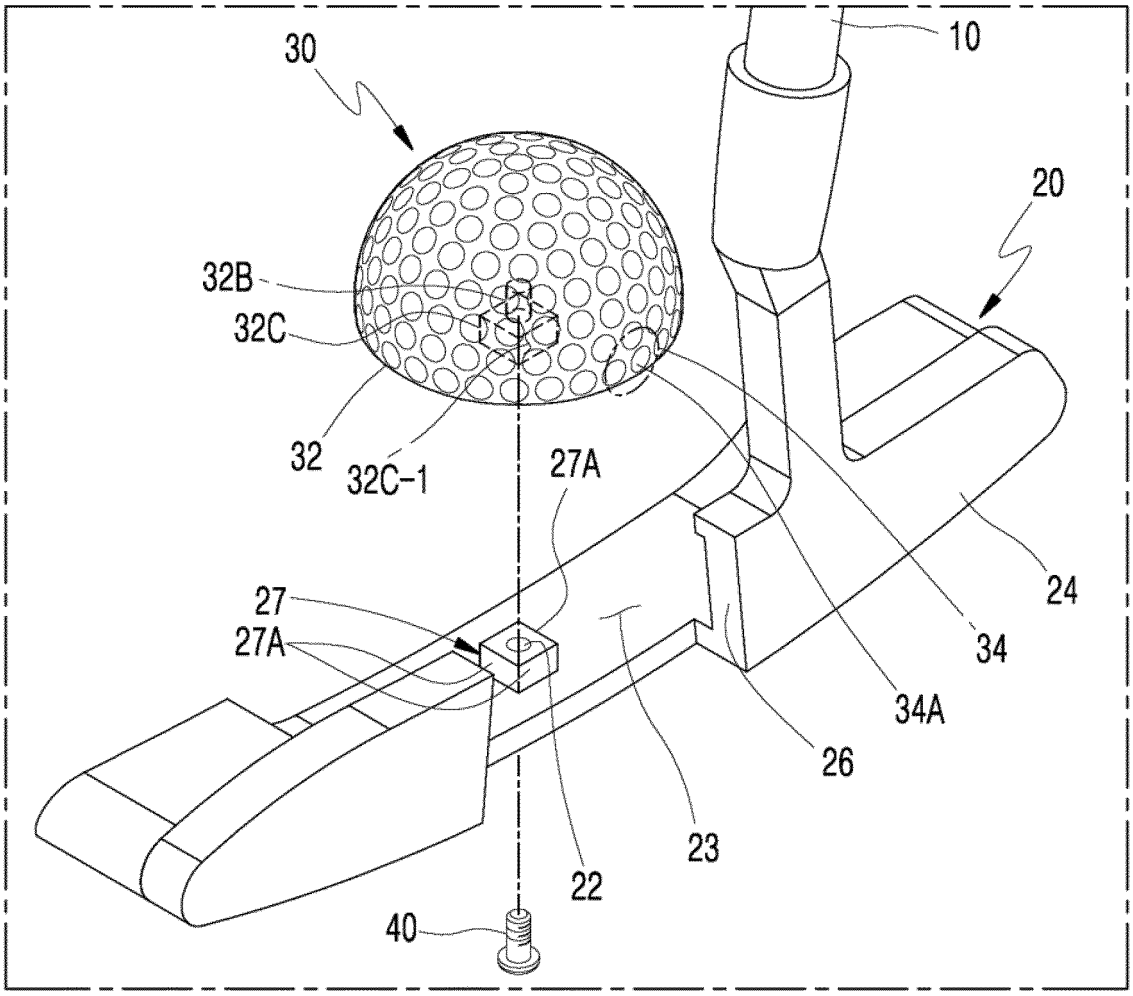

FIG.9

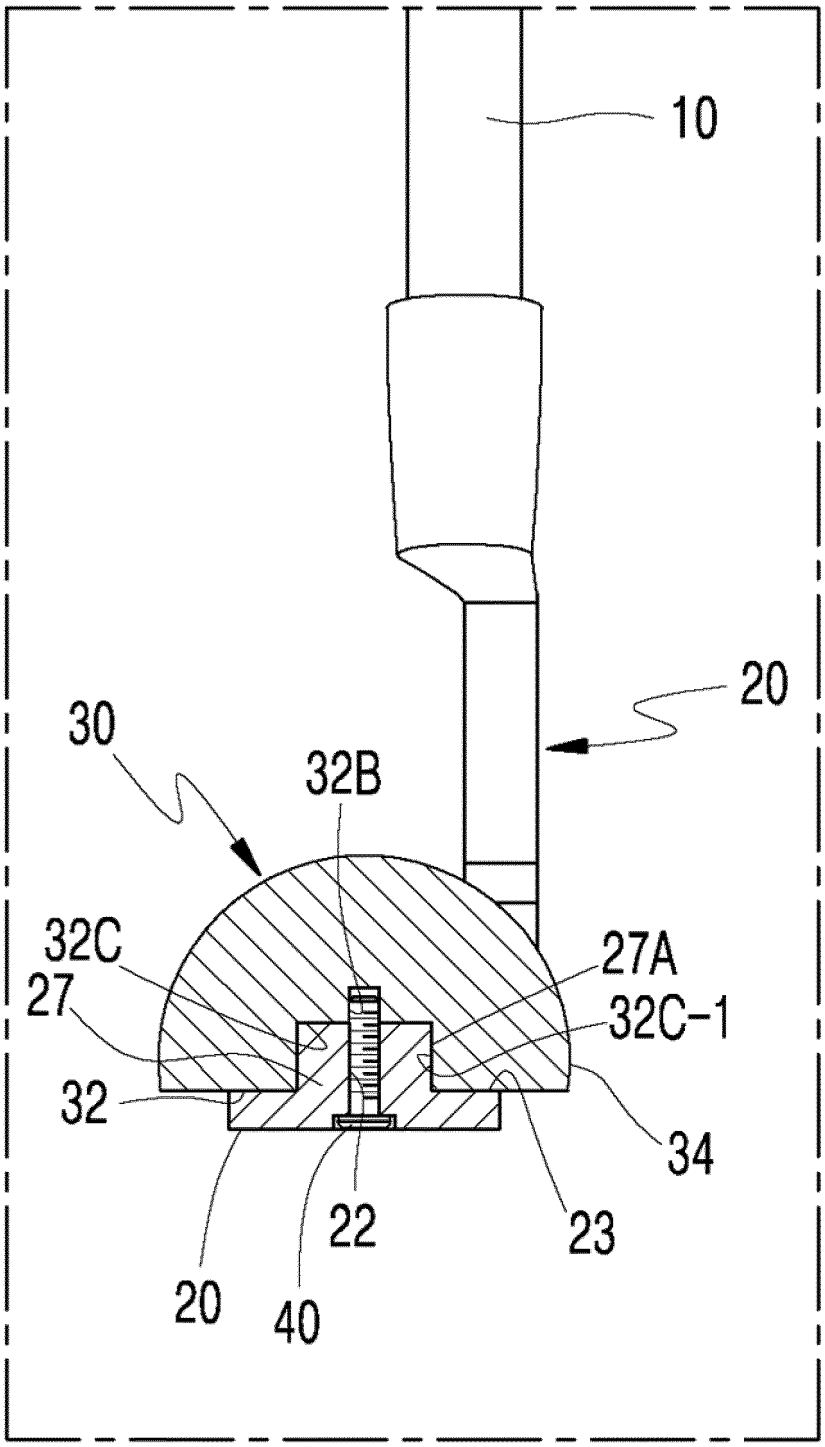

FIG.10

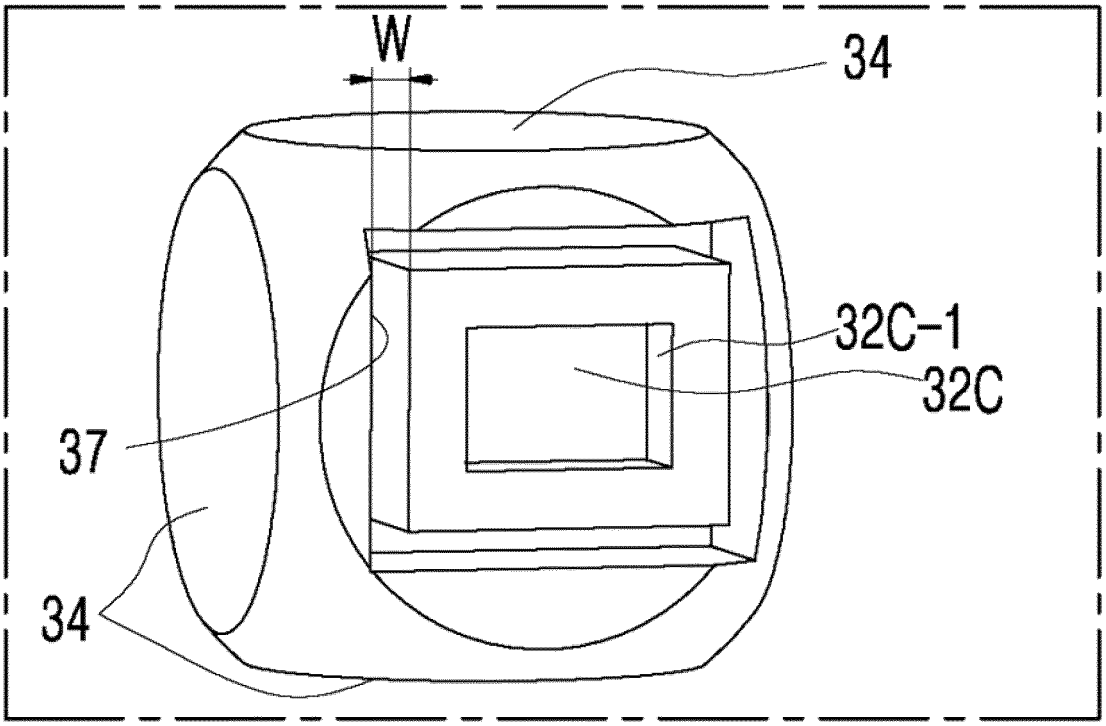

FIG.11

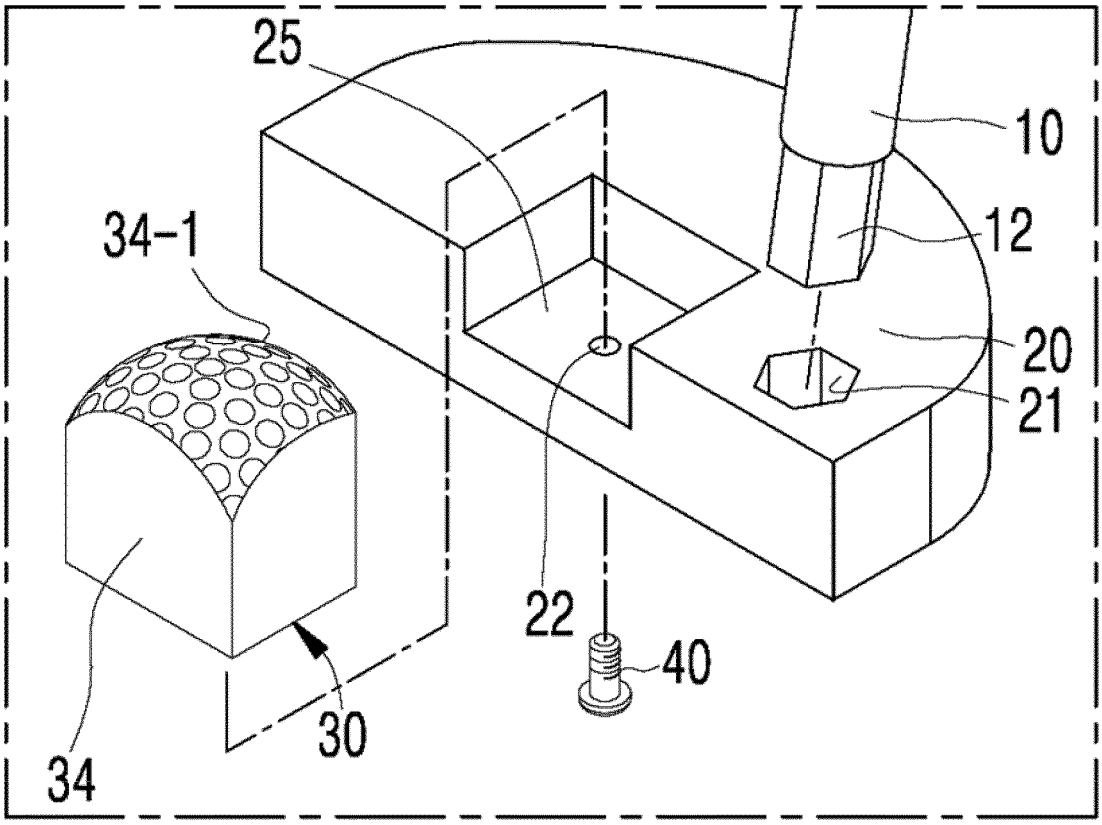

FIG.12

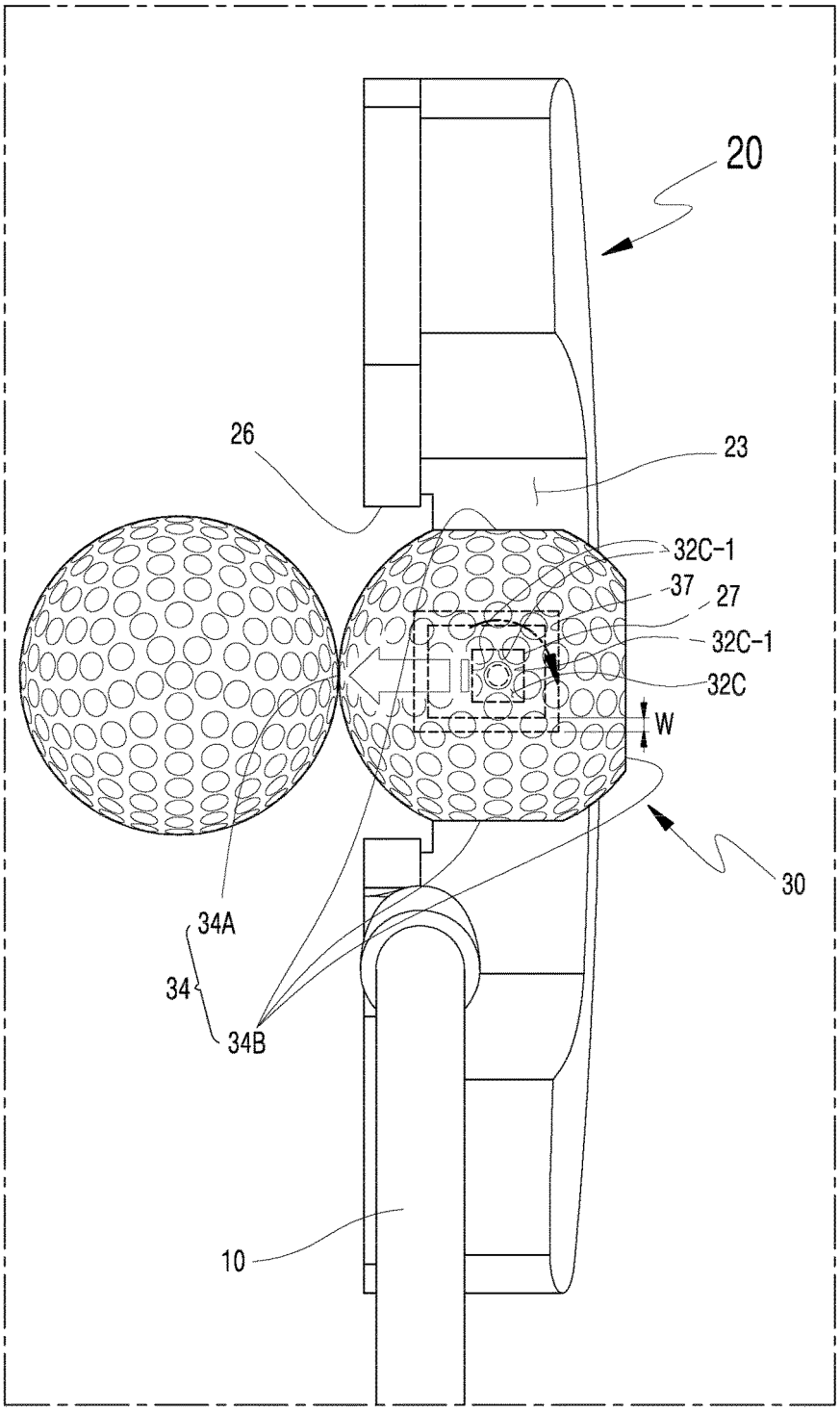

FIG.13

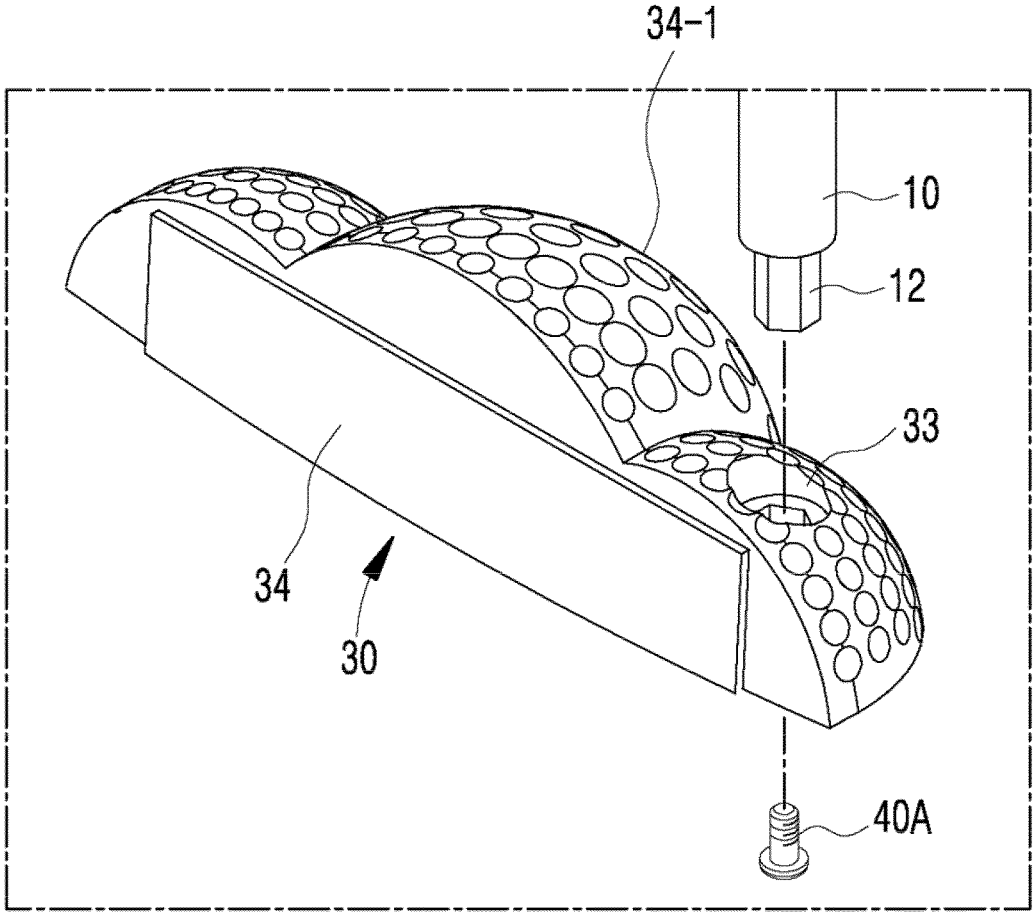

FIG.14

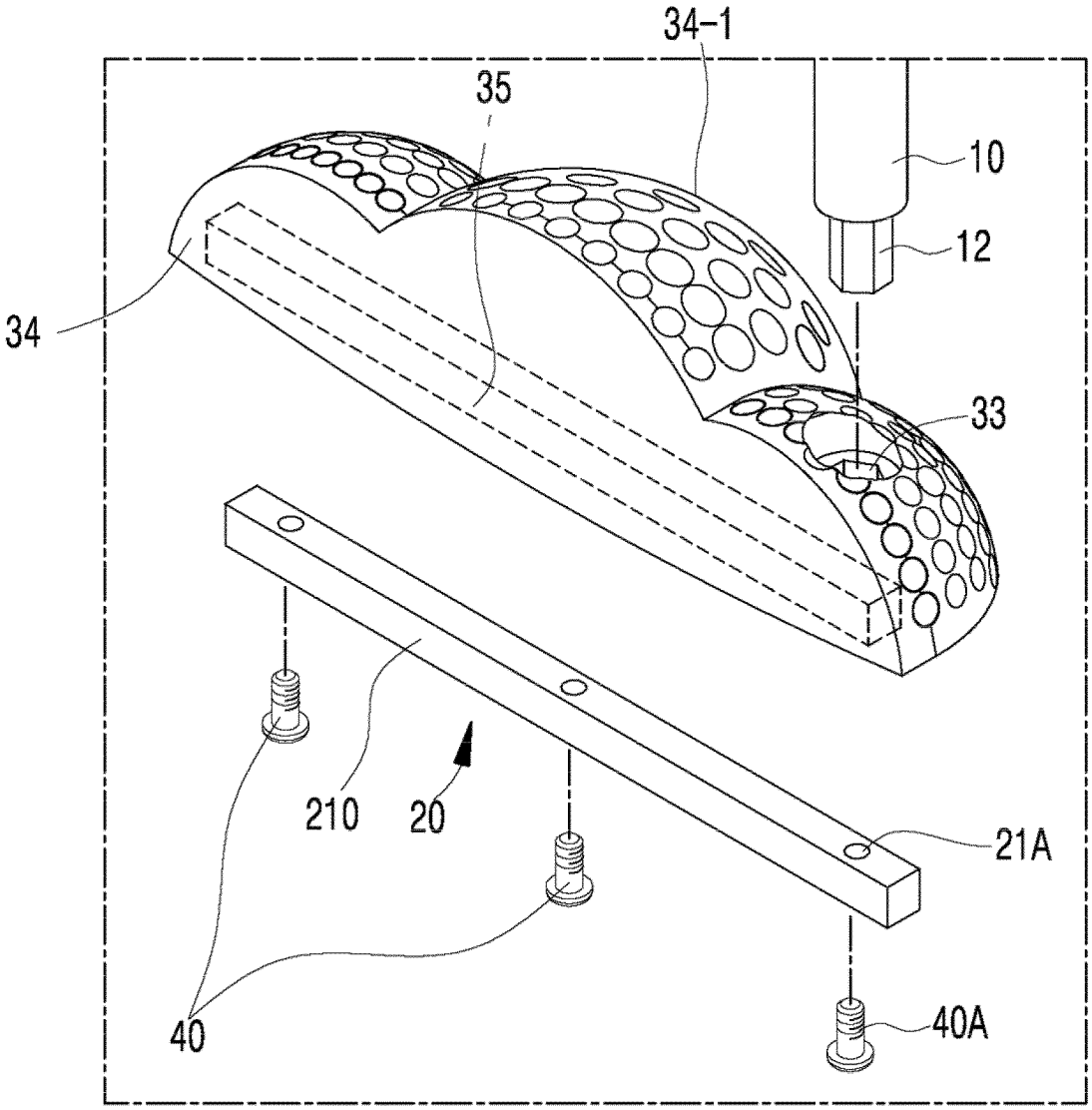

FIG.15

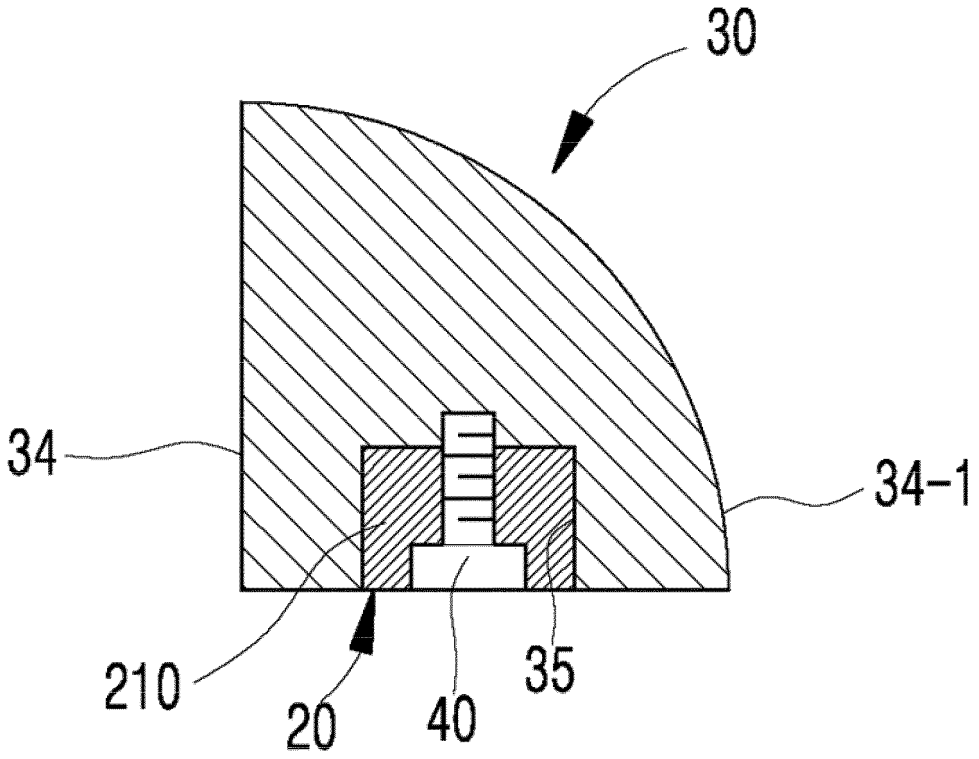

FIG.16

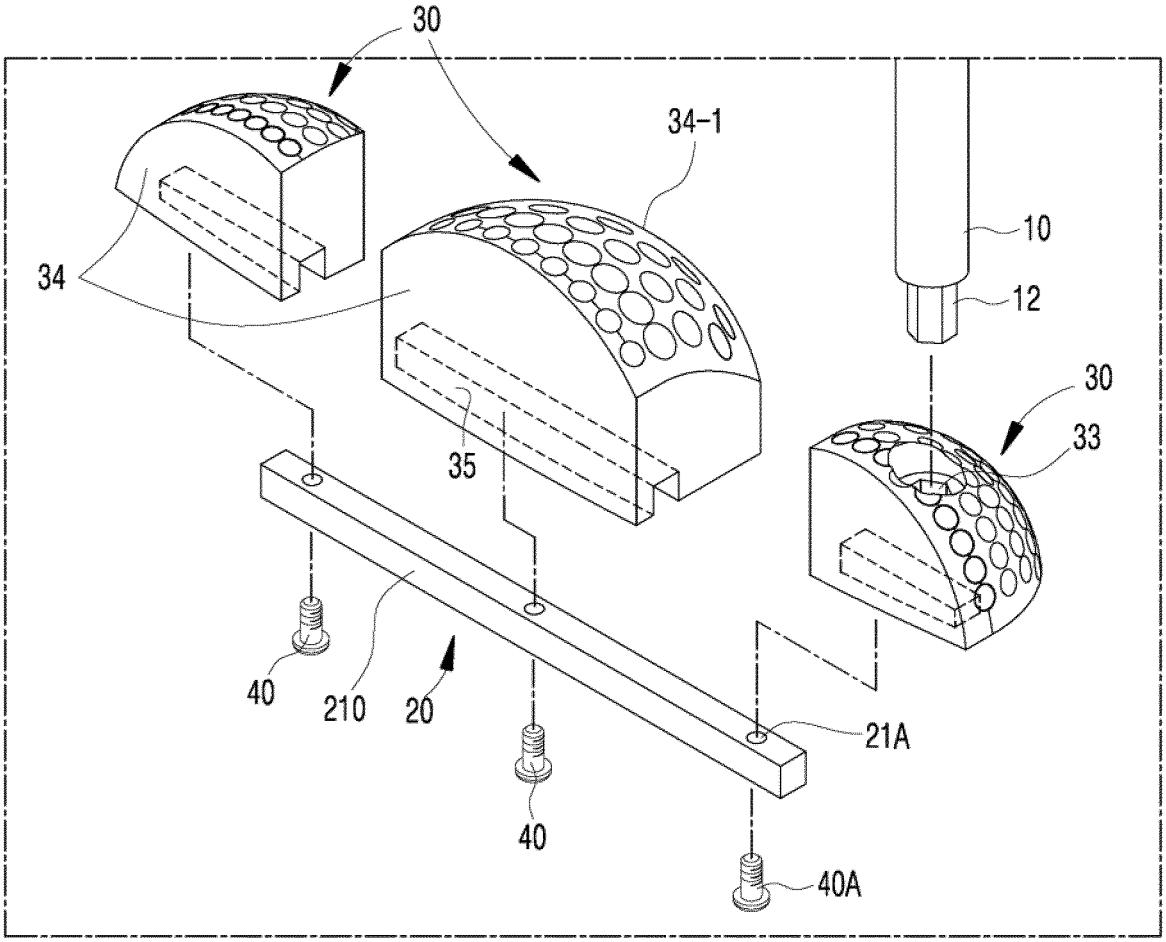

FIG.17

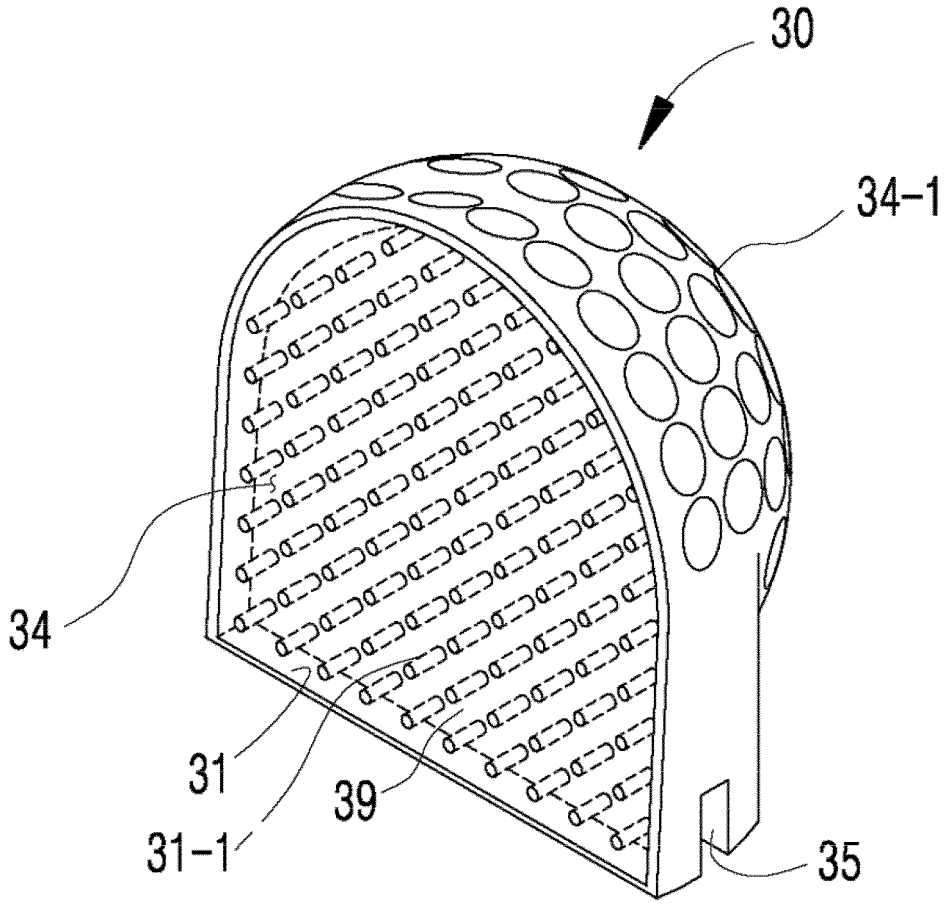

FIG.18

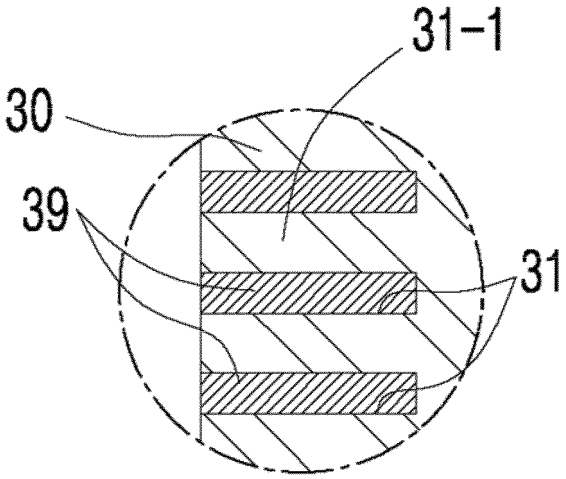

FIG.19

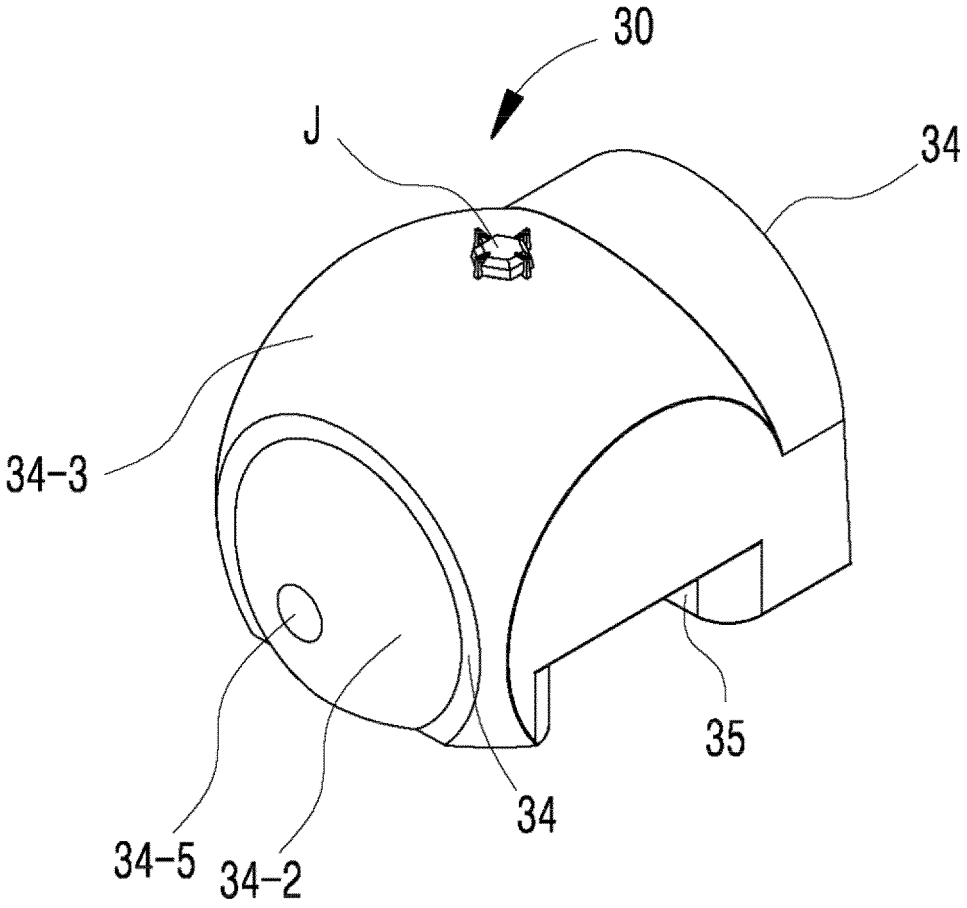

FIG.20

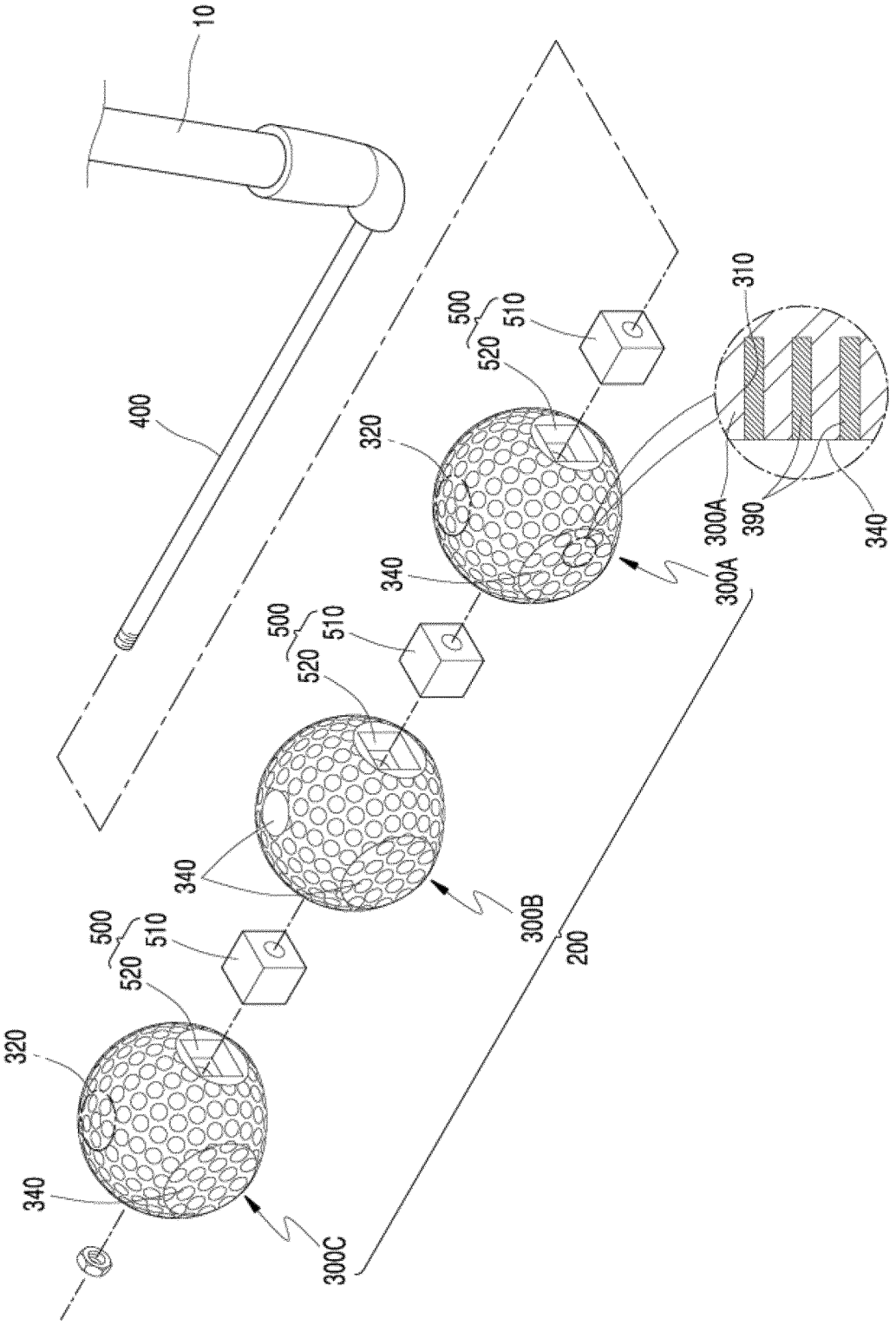
10
400
500
510
520
320
310
300A
390
340
340
300A
500
510
520
340
300B
200
500
510
520
320
340
300C

FIG.21

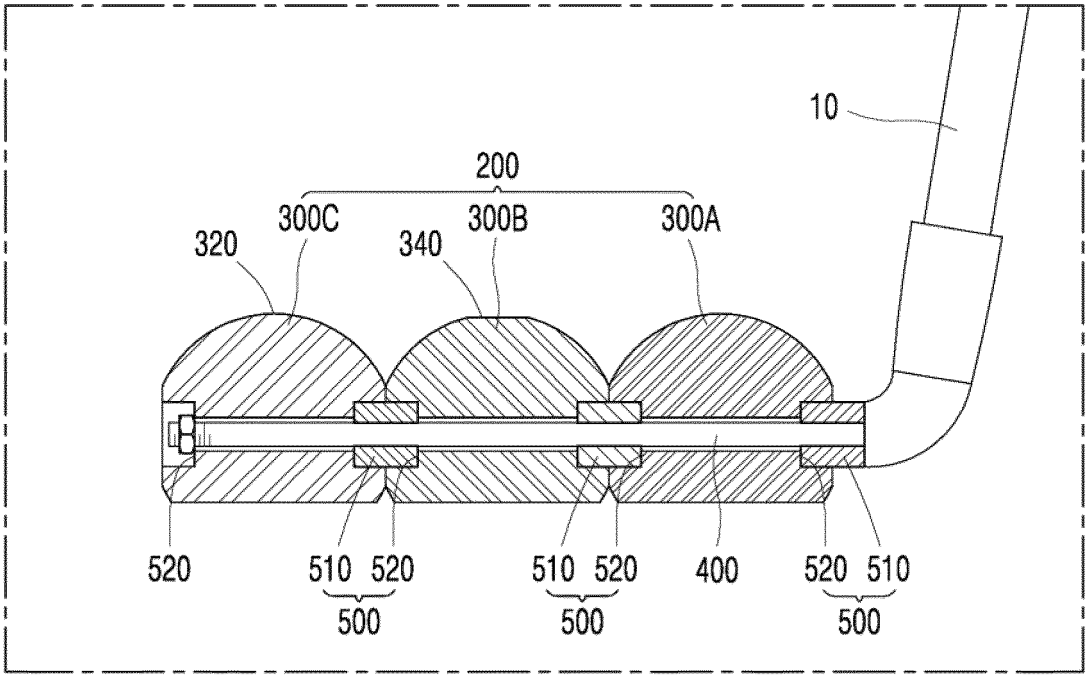
10
200
300C
300B
300A
320
340
520
510
520
510
520
400
520
510
500
500
500

FIG.22

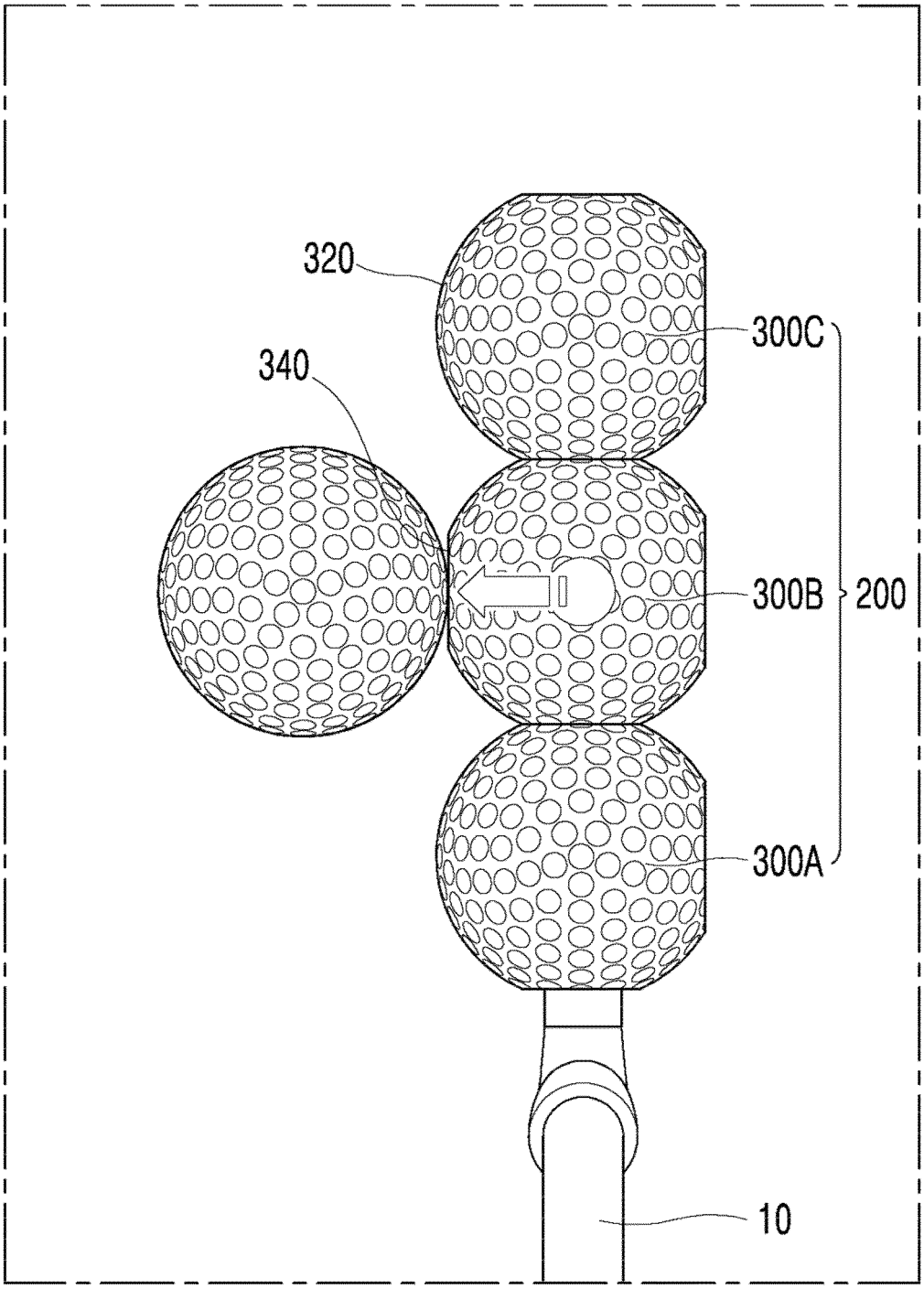

FIG.23

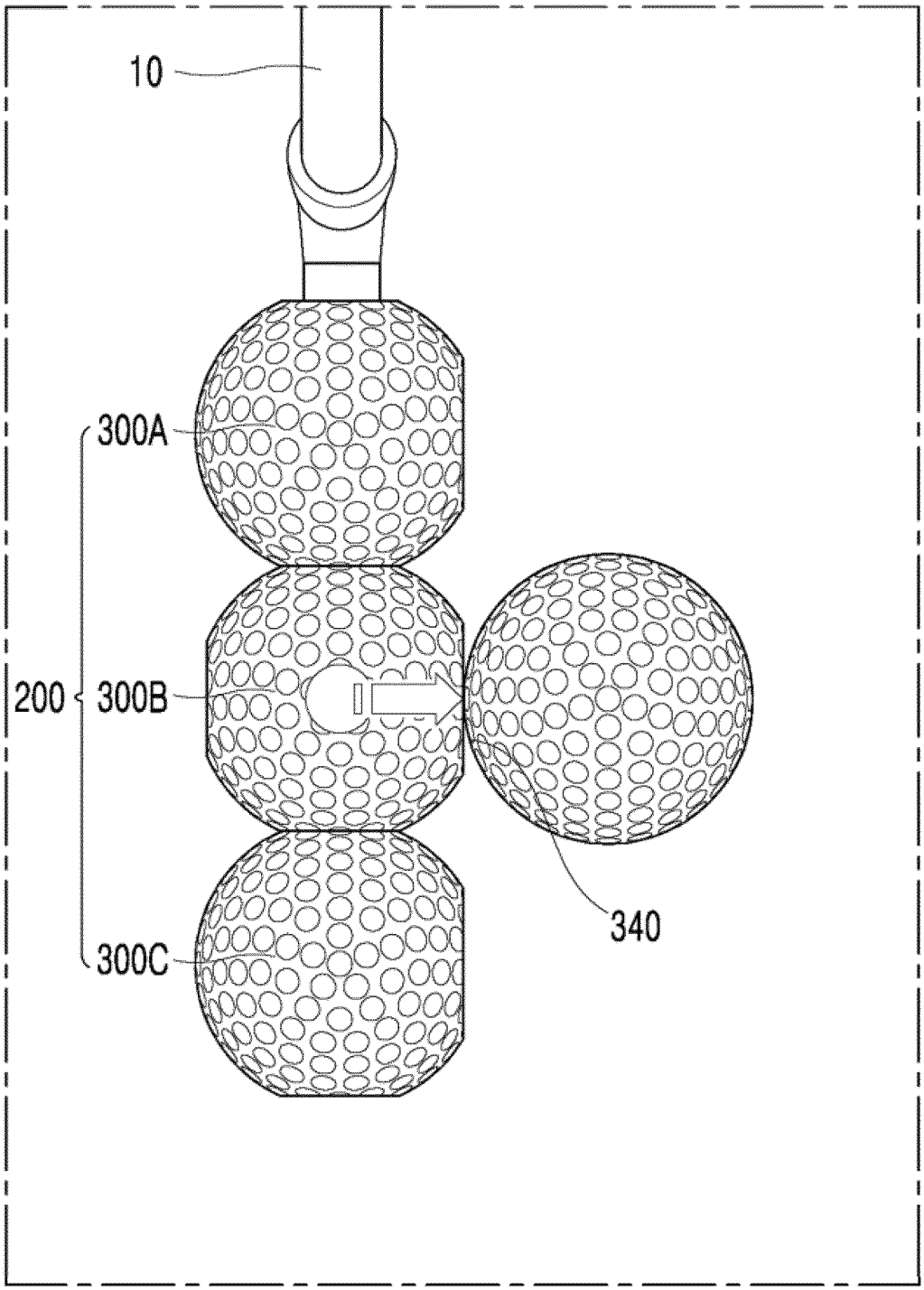

FIG.24

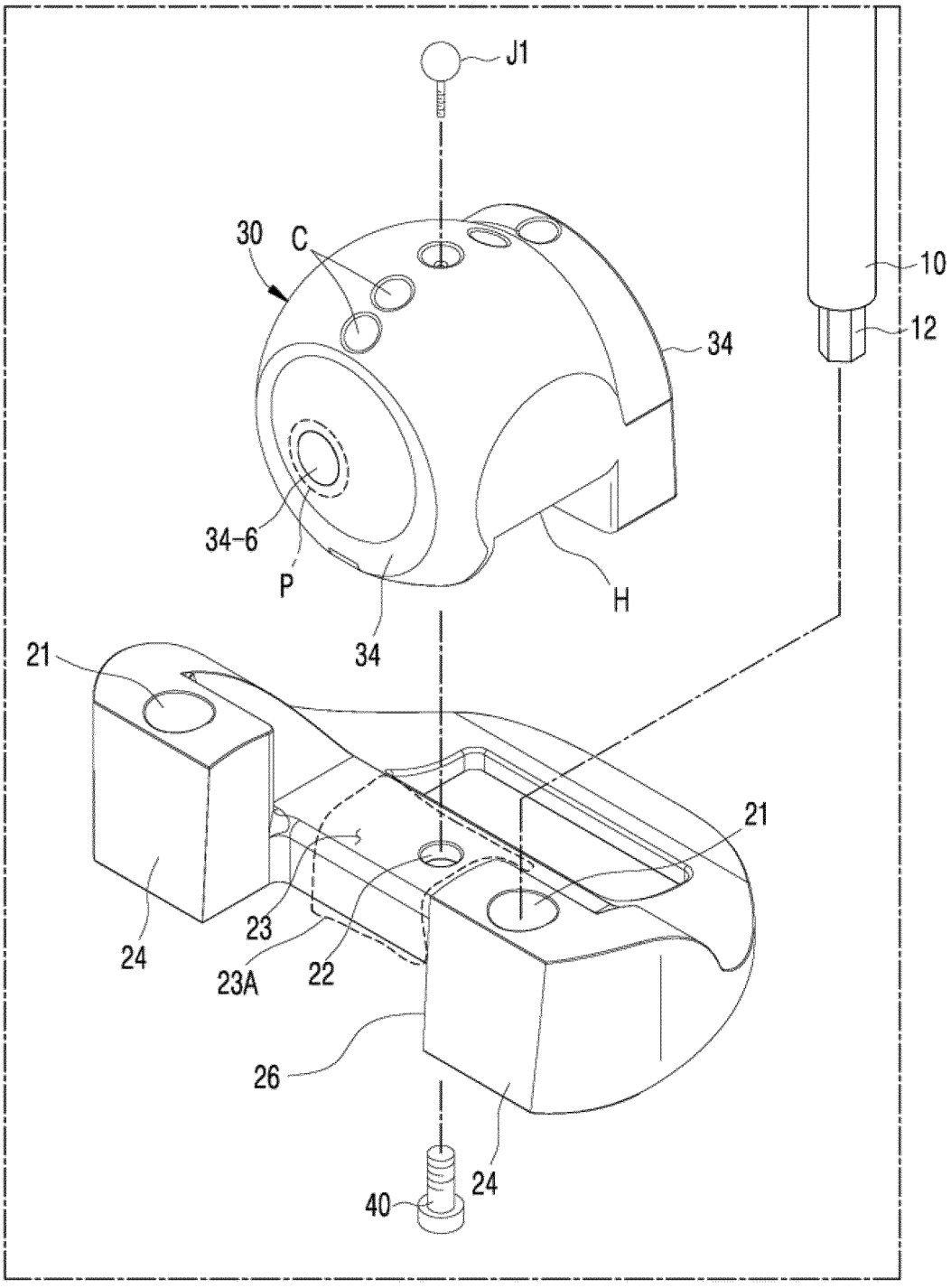

FIG.25

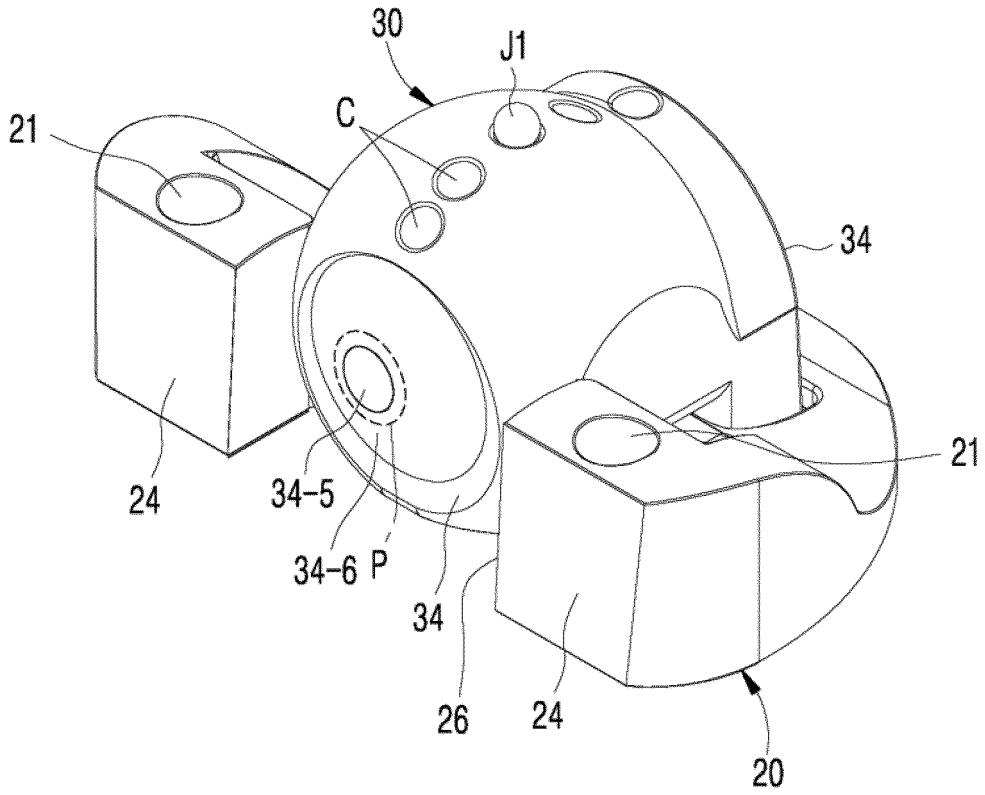

FIG.26

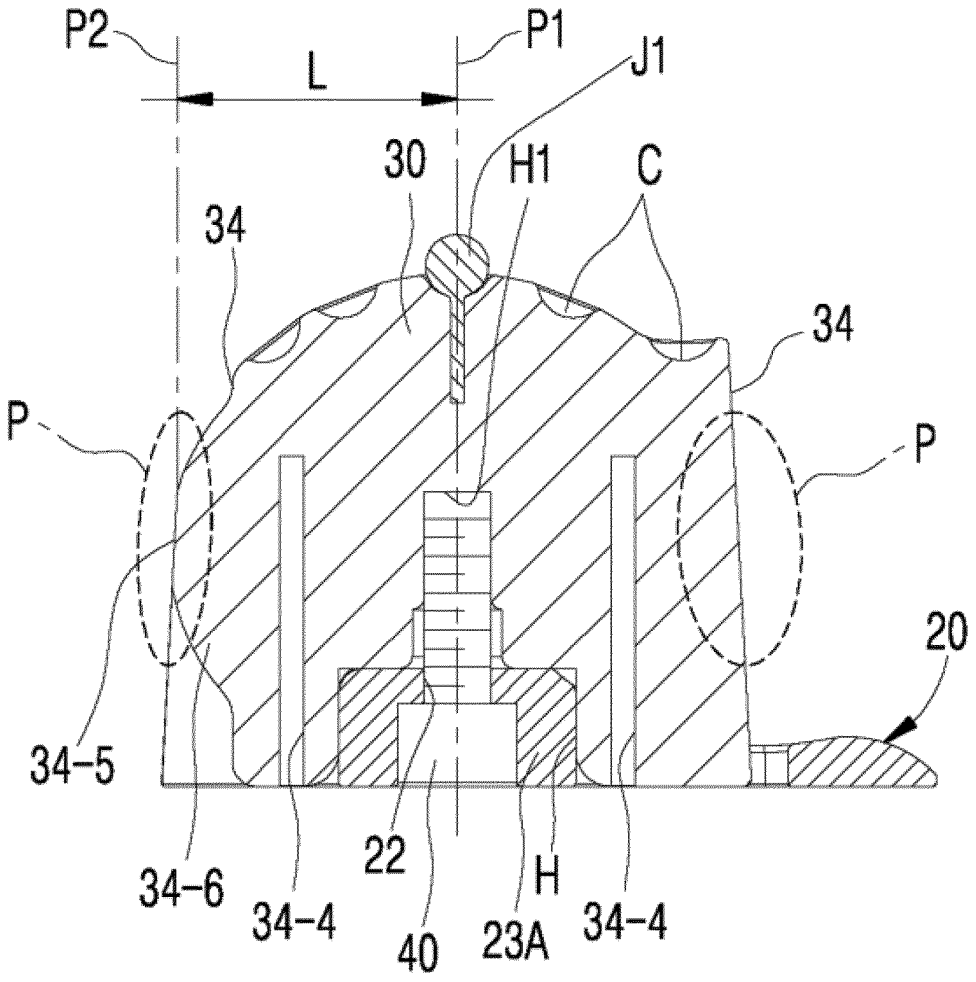

FIG.27

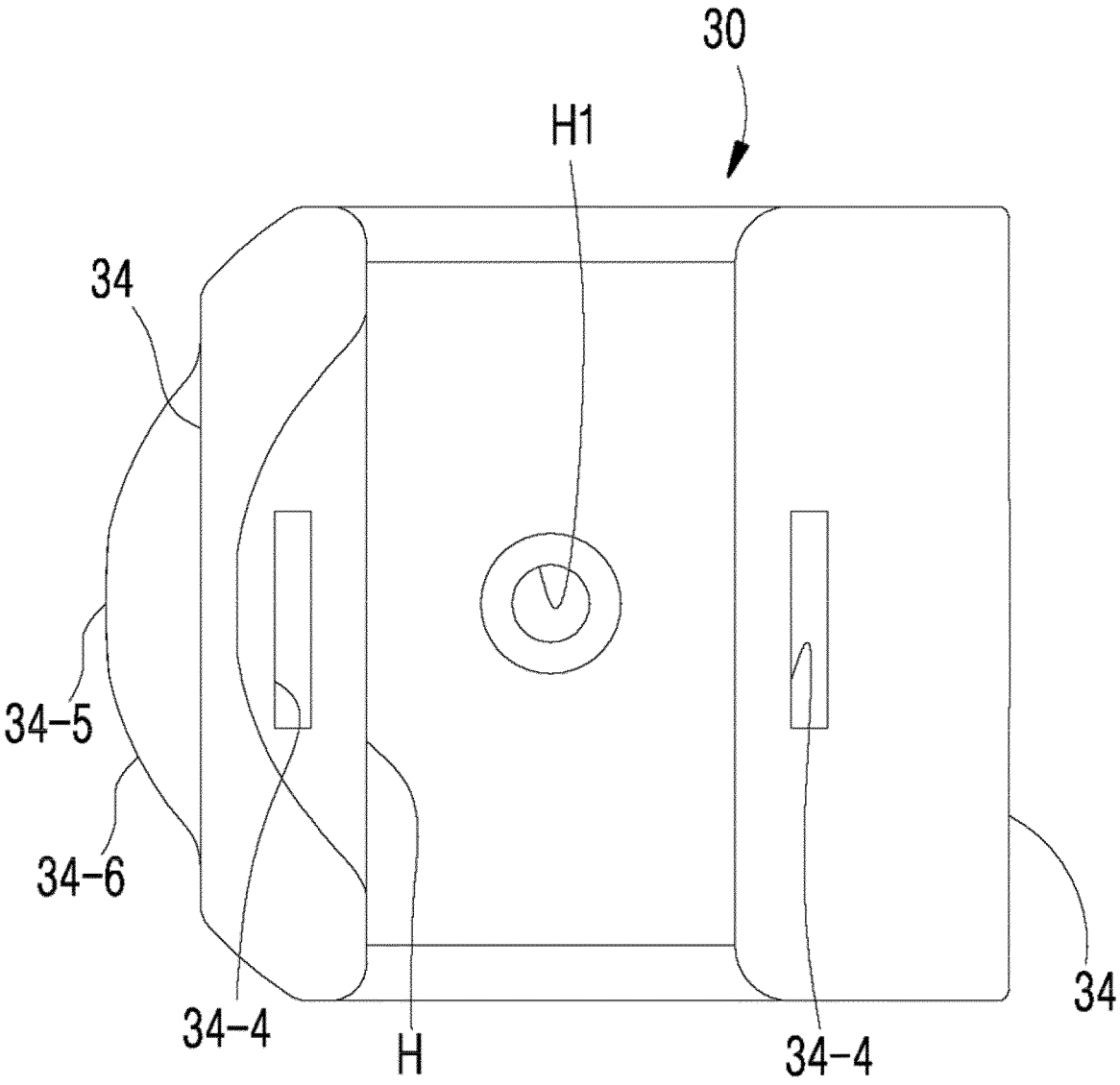

FIG.28

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2018/013558

A. CLASSIFICATION OF SUBJECT MATTER

A63B 53/06(2006.01)i, A63B 53/04(2006.01)i, A63B 69/36(2006.01)i, A63B 102/32(2014.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A63B 53/06; A63B 53/00; A63B 53/02; A63B 53/04; A63B 53/08; A63B 69/36; A63B 102/32

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility models: IPC as above
Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS (KIPO internal) & Keywords: golf, putter, head, attachment/detachment, bolt

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 20-2011-0010451 U (CHA, Chang Dae) 07 November 2011 See paragraphs [0013]-[0028]; and figures 2-5b.	1,3-4
A	KR 10-2016-0088649 A (SOHN, Kwang-Young et al.) 26 July 2016 See paragraphs [0022]-[0033]; and figures 1-5.	1,3-4
A	KR 20-0263698 Y1 (TECHNET CO., LTD.) 08 February 2002 See pages 2-3; and figures 1-3.	1,3-4
A	US 4884808 A (RETZER, Jerome E.) 05 December 1989 See column 3, line 29-column 4, line 20; and figures 1-5.	1,3-4
PX	KR 10-1828465 B1 (CHOI, Yong-Sik) 29 March 2018 See paragraphs [0028]-[0040]; claims 1-2; and figures 3-6.	1

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
06 MARCH 2019 (06.03.2019)	07 MARCH 2019 (07.03.2019)

Name and mailing address of the ISA/KR
Korean Intellectual Property Office
Government Complex Daejeon Building 4, 189, Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea
Facsimile No. +82-42-481-8578

Authorized officer

Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2018/013558

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Claims 1 and 3-4 pertain to a variable golf putter comprising: a putter head coupled to the lower end of a shaft; and a striking member having a striking surface and coupled by a fastening bolt,
Claim 2 and 5 pertain to the variable golf putter comprising: the putter head coupled to the lower end of the shaft; and the striking member having a striking surface and coupled by triangular-octagonal coupling grooves,
Claims 6-9 pertain to the variable golf putter comprising: the putter head coupled to the lower end of the shaft; and the striking member, which has a striking surface and is divided into two to five different sizes and shapes and coupled,
Claim 10-11 pertain to the variable golf putter comprising: the putter head coupled to the lower end of the shaft; and a first striking member, a second striking member, and a third striking member which have a striking surface,
Claim 12 pertains to the variable golf putter, which: comprises the striking member having a striking surface of which one end is coupled to the lower end of the shaft; and has a polygonal coupling part so as to be coupled such that a mutual coupling angle is adjusted, and
Claims 13-20 pertain to the variable golf putter comprising: the putter head coupled to the lower end of the shaft; and the striking member having a striking surface and being fastened with a screw fastening groove so as to be coupled in a state in which the coupling part is inserted into the coupling groove so as to be provisionally coupled therewith.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
claims 1, 3-4

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (2)) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2018/013558

Patent document cited in search report	Publication date	Patent family member	Publication date
KR 20-2011-0010451 U	07/11/2011	NONE	
KR 10-2016-0088649 A	26/07/2016	KR 10-1714416 B1	09/03/2017
KR 20-0263698 Y1	08/02/2002	NONE	
US 4884808 A	05/12/1989	NONE	
KR 10-1828465 B1	29/03/2018	KR 10-2018-0012609 A WO 2018-021852 A1	06/02/2018 01/02/2018

Form PCT/ISA/210 (patent family annex) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- KR 200350462 **[0007]**
- KR 200395835 **[0010]**