

Date	June 29, 2009	Court	Intellectual Property High Court, Third Division
Case number	2009 (Ne) 10006		
<p>A case in which, in response to the appeal against the judgment in prior instance that dismissed the plaintiff's patent infringement claim, the court rendered an interlocutory judgment determining that the defendant's products fall within the technical scope of the plaintiff's patented invention under the doctrine of equivalents, and that the plaintiff's patent cannot be regarded as one that should be invalidated by a trial for patent invalidation</p>			

References:

Articles 70 and 104-3 of the Patent Act, Article 245 of the Code of Civil Procedure

Based on the patent right for the invention entitled "hollow golf club head," the plaintiff filed a suit claiming patent infringement by the defendant, seeking compensation and damages from the defendant for the manufacturing and sale of its golf clubs (the defendant's product). The court of prior instance rendered a judgment to dismiss the plaintiff's claim, on the grounds that the defendant's product does not literally have the constituent features of the plaintiff's invention, nor can it be construed to be equivalent to the plaintiff's invention in terms of the constitution of the invention, and therefore the defendant's product does not fall within the technical scope of the plaintiff's invention. The plaintiff appealed against this judgment.

In the second instance, the court rendered an interlocutory judgment determining that: (i) the defendant's product does not constitute literal infringement because it does not literally have the constituent features of the plaintiff's invention; (ii) however, the defendant's product can be construed to be equivalent to the plaintiff's invention in terms of the constitution of the invention, and in this respect it falls within the technical scope of the plaintiff's invention; and (iii) the plaintiff's invention cannot be found to lack an inventive step, and therefore the plaintiff's patent cannot be declared invalid.

Judgment rendered on June 29, 2009

2009 (Ne) 10006, Appeal case claiming compensation, etc.

(Court of prior instance: Tokyo District Court, Case No. 2007 (Wa) 28614)

Date of conclusion of oral argument: April 15, 2009

Interlocutory judgment

Appellant: The Yokohama Rubber Co. Ltd.

Counsel attorney: UETANI Kiyoshi

Same as above: NAGAI Noriaki

Same as above: NITTA Mutsuo

Same as above: HAGIO Yasushige

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Appellee: YONEX CO., LTD.

Counsel attorney: KOBAYASHI Yukio

Same as above: YUGETA Hiroshi

Same as above: SAKATA Youichi

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Same as above: AOKI Yasushi

Main Text

The golf clubs stated in the attached product list, which are manufactured and sold by the appellee, fall within the technical scope of the invention stated in Claim 1 in the scope of claims of the patent stated in the attached patent list, which is held by the appellant. It cannot be found that said patent should be invalidated by a trial for patent invalidation.

Facts and Reasons

No. 1 Object of the appeal

1. The judgment in prior instance shall be rescinded.
2. The appellee shall pay to the appellant 200,000,000 yen with money accrued thereon at the rate of 5% per annum for the period from November 7, 2007 until the completion of payment.
3. The appellee shall bear the court costs for both the first instance and second

instance.

#### 4. Declaration of provisional execution.

##### No. 2 Outline of the case

In this case, the appellant (plaintiff in the prior instance; hereinafter simply referred to as the "plaintiff") alleged that the seven types of golf clubs stated in the attached product list (which is the same attached product list used in the judgment in prior instance), which are manufactured and sold by the appellee (defendant in the prior instance; hereinafter simply referred to as the "defendant") (hereinafter these golf clubs shall be collectively referred to as the "defendant's products"), fall within the technical scope of the invention stated in Claim 1 in the scope of claims of the patent stated in the attached patent list (Patent No. 3725481), which is held by the plaintiff (hereinafter said invention shall be referred to as the "Invention"), and based on this allegation, the plaintiff claimed against the defendant the payment of 200,000,000 yen as a partial claim of the sum of the compensation based on Article 65, paragraph (1) of the Patent Act for the period from the day on which the warning was given after the laying open of the patent application until the registration of establishment of the patent right and the damages based on Article 709 of the Civil Code for the period starting from the registration of establishment of the patent right, as well as the delay damages accrued thereon at the rate of 5% per annum as prescribed in the Civil Code for the period from November 7, 2007, which is the day after the claim for compensation and conduct of tort were made (the day immediately following the day of service of the complaint), until the completion of payment.

The judgment in prior instance dismissed the plaintiff's claim by finding that the defendant's products did not literally fulfill the constituent features of the Invention and could not be construed to be equivalent to the structure of the Invention and thus did not fall within the technical scope of the Invention. Dissatisfied with this judgment, the plaintiff filed an appeal.

The abbreviations used in the prior instance shall be used in this court without any change.

##### 1. Assumed facts

Except for the parts modified as follows, the assumed facts are the same as those presented in the judgment in prior instance, i.e. the statements presented in the section titled "1. Assumed facts" (line 14 of page 2 to line 24 of page 4 of the judgment in prior instance) of the subsection "No. 2 Outline of the case" under the section "Facts and reasons" in the judgment in prior instance. Therefore, the corresponding part of the judgment in prior instance may be cited.

(1) The content from line 21 of page 2 to line 16 of page 3 of the judgment in prior instance shall be modified as follows.

"A. The plaintiff holds the patent right stated in the attached patent list (hereinafter the patent right shall be referred to as the "Patent Right" and the patent thereof shall be referred to as the "Patent") (Exhibits Ko No. 1 and No. 2).

B. The statements in Claim 1 in the scope of claims stated in the description, which was attached to the patent application filed for the Patent (said description is the one after the amendment of proceedings was performed by the written amendment of proceedings dated May 9, 2005; hereinafter the description after said amendment of proceedings shall, together with the drawing after said amendment of proceedings, be referred to as the "Description") are as stated in the attached patent list (Exhibits Ko No. 2 and No. 6).

(2) The following description shall be inserted after line 13 of page 4 of the judgment in prior instance, beginning on a new line.

"The defendant's products comprise the following structure. (Undisputed facts)

<a> A hollow golf club head forming a head body of a hollow structure by bonding the metallic outer shell member 1 and the FRP outer shell members 9 and 10; wherein

<b> the bonding portions of the lower FRP outer shell member 9 and upper FRP outer shell member 10 are bonded to the flange portion 5 of the metallic outer shell member 1,

<c> the through hole 7 is established in the flange portion 5a of the metallic outer shell member 1,

<e> a hollow golf club head.

As mentioned below, there are disputes between the parties with respect to the specification of structure <d> that shows the relationship between the through hole 7, the short and small strips 8 made of carbon fiber, the metallic outer shell member 1, the upper FRP outer shell member 9, and the lower FRP outer shell member 10."

## 2. Issues

Except for the parts modified as follows, the issues are the same as those presented in the judgment in prior instance, i.e. the statements presented in the section titled "2. Issues" (line 26 of page 4 to line 3 of page 5 of the judgment in prior instance) of the subsection "No. 2 Outline of the case" under the section "Facts and reasons" in the judgment in prior instance. Therefore, the corresponding part of the judgment in prior instance may be cited.

(1) The phrase "(4) the plaintiff's compensation, etc." in line 3 of page 5 of the judgment in prior instance shall be modified to "(4) whether or not a claim for compensation is acceptable, as well as the amount of compensation and damages, etc."

(2) The following description shall be inserted after line 3 of page 5 of the judgment in prior instance, beginning on a new line.

"This judgment has determined exclusively the abovementioned issues (1) through (3) as an interlocutory judgment."

#### No. 3 Allegations of the parties concerning the issues

Except for the parts modified as follows, the allegations of the parties concerning the issues are the same as those presented in the judgment in prior instance, i.e. the statements presented in the subsection titled "No. 3 Allegations of the parties concerning the issues" (line 5 of page 5 to line 9 of page 33 of the judgment in prior instance) under the section "Facts and reasons" in the judgment in prior instance. Therefore, the corresponding part of the judgment in prior instance may be cited.

1. The following description shall be inserted after line 7 of page 7 of the judgment in prior instance, beginning on a new line.

"Moreover, the 'stitching member' prescribed in the Invention is made of fiber reinforced plastic, and it is a common general technical knowledge for a person ordinarily skilled in the art that [a] members made of fiber reinforced plastic are used after undergoing a curing process, [b] regardless of the thickness, such members produce stiffness by curing, and [c] fiber reinforced plastic members having stiffness through curing shall be automatically locked to the 'adhesive interface side' between the metallic outer shell member and the fiber reinforced plastic outer shell member and the 'opposite surface side thereof.' As stated above, the Invention produces an effect to increase the bonding strength between the fiber reinforced plastic outer shell member and metallic outer shell member by means of the tensile force inhibiting peeling that is produced by the coupling of the fiber reinforced plastic outer shell member and metallic outer shell member. The 'stitching member' prescribed in constituent feature (d) refers to 'a member playing the role of bonding (binding)' and thus, the fiber reinforced plastic member that increases the bonding strength by automatically locking a metallic outer shell member and a fiber reinforced plastic outer shell member in the abovementioned manner should be construed to be a 'stitching member.' As such, there are no grounds to limit the 'stitching member' to a series of continuous members."

2. The content from line 17 to line 19 of page 7 of the judgment in prior instance shall be modified as follows.

"The 'short and small strips made of carbon fiber enclosed by resin' as prescribed in

structure <d> of the defendant's products have a commonality with the 'stitching member' prescribed in constituent feature (d) of the Invention in the point that they achieve an effect to increase the bonding strength by the tensile force of a strip by adopting the bonding form where the strip is passed through the adhesive interface side between the metallic outer shell member and the fiber reinforced plastic outer shell member and the opposite surface side thereof via a through hole and is locked on to the opposite surface side, thereby coupling the fiber reinforced plastic outer shell member and metallic outer shell member by the strip.

Accordingly, the 'short and small strips made of carbon fiber' of the defendant's products correspond to the 'stitching member' prescribed in constituent feature (d) of the Invention and thus, structure <d> of the defendant's products literally fulfills constituent feature (d) of the Invention."

3. The following description shall be inserted after line 4 of page 13 of the judgment in prior instance, beginning on a new line.

"Moreover, the 'stitching member' of the Invention does not utilize the locking effect obtained by stiffness, as explained below.

First of all, whether or not a member made of fiber reinforced plastic has stiffness varies widely based on the amount of reinforcement fiber contained within the plastic and the way it is contained, as well as the type and thickness of resin. With respect to the Invention, the through hole only has a diameter of few millimeters at the most and thus, the thickness of the stitching member should be even thinner than that of the metallic outer shell member (whose thickness is considered to be about one millimeter). As such, since the stitching member made of fiber reinforced plastic as prescribed in the Invention is extremely thin, it is obvious that it doesn't have stiffness.

Next, the Description does not disclose any fact of locking a member made of fiber reinforced plastic. Since members made of fiber reinforced plastic have flexibility, unless such members are sequentially passed through the through hole in the metallic outer shell member by winding, the bonding strength between the metallic outer shell member and fiber reinforced plastic outer shell member cannot be increased. Moreover, since members made of fiber reinforced plastic have high tensile strength, if the stitching member is sequentially passed through a plurality of through holes in the metallic outer shell member by winding and is adhered to a fiber reinforced plastic outer shell member, such member can resist the great force which could possibly break up the adhesion between the metallic outer shell member and fiber reinforced plastic outer shell member."

4. The content from line 14 to line 23 of page 13 of the judgment in prior instance shall

be modified as follows.

"In the defendant's products, short and small strips made of carbon fiber are inserted within a plurality of through holes in the metallic outer shell member, the upper and lower edges of such strips are extended along the upper and lower surface of the metallic outer shell member, and an upper fiber reinforced plastic outer shell member and lower fiber reinforced plastic outer shell member are placed in a manner sandwiching the metallic outer shell member. By inserting these members in a mold and heating and applying pressure thereto, the resin of upper and lower fiber reinforced plastic outer shell members is filled in the through holes as well as in the upper and lower edge portions of the strips, and the upper and lower fiber reinforced plastic outer shell members are integrally adhered to the upper and lower edge portions of the short and small strips filled in these through holes. As a result, even if a great force which could possibly break up the adhesion between the metallic outer shell member and fiber reinforced plastic outer shell member is applied, the defendant's products can resist it.

As described above, in the defendant's products, due to the integration of the metallic outer shell member and the fiber reinforced plastic outer shell members by sandwiching said metallic outer shell member with the upper fiber reinforced plastic outer shell member and lower fiber reinforced plastic outer shell member from the top and bottom, and jointing these fiber reinforced plastic outer shell members by short and small strips and thereby increasing integration, the break down of such members is prevented. In other words, the effect of the short and small strips is the increase of integration.

As such, the defendant's products are different from the Invention in terms of the technical idea."

5. The following description shall be inserted after line 2 of page 27 of the judgment in prior instance, beginning on a new line.

"Even if the stitching member of the Invention is to be locked on the opposite surface side of the metallic outer shell member, Figure 5 in Exhibit Otsu No. 13 shows a structure wherein the core body 3 made of metal is formed integrally with the sole portion on the upper side of metallic sole portion 2 via the through hole 7, and the core body is coated by the fiber reinforced plastic outer shell 4, and is further wound with the plastic reinforcement fiber 10 that is passed through the through hole. Since this plastic reinforcement fiber 10 is wound on and locked to the core body after being passed through the through hole from one side to the other, Exhibit Otsu No. 13 has disclosed the fact that the stitching member is to be locked on the opposite surface side of the metallic outer shell member."

6. The following description shall be inserted after line 17 of page 27 of the judgment in prior instance, beginning on a new line.

"Exhibit Otsu No. 14 is an invention of the manufacturing process of a golf club head. Since there was a problem that the head body of FRTP (fiberglass reinforced thermo plastics) and the metal frame become loose by the impact force produced when hitting a ball, the invention is characterized by integrally forming the metal frame and head body within the mold in order to solve this problem. Exhibit Otsu No. 14 presents an example where the metal frame and face member are fixed by an adhesive bond, as a comparative example of the working example, and the adhesive strength when using the adhesive bond is evaluated as being weaker in comparison to the adhesive strength obtained by the abovementioned integral formation. Nevertheless, there was a major technical innovation in the field of adhesive bonds during the period from 1989, when Exhibit Otsu No. 14 was laid open, until 2002, when a patent application was filed for the Patent, and the adhesive strength thereof was substantially improved, and thus the decision to perform adhesion by means of an adhesive bond or integral formation was merely a selective matter at the time of filing an application for the Patent. Therefore, constituent feature (b) of the Invention ('adhering the bonding portion of the fiber reinforced plastic outer shell member to the bonding portion of the metallic outer shell member') can be found to have been disclosed or suggested in Exhibit Otsu No. 14."

7. The following description shall be inserted after line 23 of page 28 of the judgment in prior instance, beginning on a new line.

"Even if the adhesive strength of an adhesive bond was improved in 2002, when an application was filed for the Patent in comparison to that in 1989, the statement concerning the adhesion made in the comparative example shown in Exhibit Otsu No. 14 does not disclose or suggest the structure of the Invention."

8. The following description shall be inserted after line 13 of page 29 of the judgment in prior instance, beginning on a new line.

"The defendant alleges that, since the plastic reinforced fiber 10 shown in Exhibit Otsu No.13 is wound and locked on the core body after being passed through the through hole from one side to the other, Exhibit Otsu No. 13 discloses that the stitching member is to be locked on the opposite surface side of the metallic outer shell member. While this allegation made by the defendant is based on the premise that the core body 3 corresponds to the metallic outer shell member, the core body 3 does not have a through hole. Thus, the core body 3 cannot be found to correspond to the metallic outer shell member, and the abovementioned allegation made by the defendant cannot be accepted."



No. 4 Judgment of this court

1. Regarding Issue (1) (fulfillment of constituent feature (d))

The content from line 12 of page 33 to line 22 of page 45 of the judgment in prior instance shall be modified as follows.

"(1) Regarding the meaning of the 'stitching member' prescribed in constituent feature (d)

While it is obvious from the statements in the scope of claims that the 'stitching member' prescribed in constituent feature (d) which is 'made of fiber reinforced plastics is, via the through hole,' 'passed through the adhesive interface side between the metallic outer shell member and the fiber reinforced plastic outer shell member and the opposite surface side thereof and thereby coupling said fiber reinforced plastic outer shell member and said metallic outer shell member,' this court will consider whether or not the 'stitching member' should be interpreted with some kind of limitations from a technical standpoint, etc. on the grounds of using the term 'stitching.'

A. Statements in the scope of claims

(A) As mentioned above, the scope of claims (constituent feature (d)) contains a statement that the 'stitching member made of fiber reinforced plastics is, via the through hole, passed through the adhesive interface side between the metallic outer shell member and the fiber reinforced plastic outer shell member and the opposite surface side thereof, thereby coupling said fiber reinforced plastic outer shell member and said metallic outer shell member.' According to the abovementioned statement, it is obvious that the 'stitching member' is a member used for the purpose of coupling the fiber reinforced plastic outer shell member and metallic outer shell member.

Meanwhile, it is explained that the term 'stitching' is usually used to mean 'to suture' or 'to join two surfaces or edges by sewing; stitch together,' while the term 'sew' is used to mean '[i] to pierce and sew cloth or leather, etc. by a needle and thread, [ii] to lace; to make a stitch, [iii] to penetrate an armor by a pike or an arrow as a needle stitching cloth or leather, etc., or [iv] to pass between things by twisting right and left' (Kojien, refer to Exhibit Otsu No. 2).

As such, when the term 'stitching member' is interpreted in line with the general meaning, it would have the meaning of 'a member used to couple a plurality of objects by penetrating through all of such objects intended to be coupled.' If the 'stitching member' of the Invention is a member to stitch the metallic outer shell member and fiber reinforced plastic outer shell member in the

abovementioned meaning, it would mean a member that is passed through the through holes pierced in both the metallic outer shell member and fiber reinforced plastic outer shell member and thereby pierces, sews and locks the outer shell members.

However, according to constituent features (c) and (d), the stitching member of the Invention is a member which is passed through the through hole provided only in the metallic outer shell member, and there are no statements that it is a member that pierces a through hole in both the metallic outer shell member and fiber reinforced plastic outer shell member and penetrates through the two outer shell members.

(B) Based on the abovementioned findings, the 'stitching member' of the Invention is used in a meaning different from the usual one; 'a member used to couple a plurality of objects by penetrating through all of them.' Meanwhile, since the meaning of 'stitching' is ambiguous, the technical meaning of 'stitching member' cannot be unambiguously defined from the statements in the scope of claims (Claim 1).

#### B. Statements in the Description, etc.

The statements made in the detailed explanation of the invention in the Description shall be referred to.

(A) In the section of 'prior art' contained in the detailed explanation of the invention in the Description, there is a statement that 'when having a head body of a hollow structure formed by bonding a metallic outer shell member and fiber reinforced plastic outer shell member, it was very difficult to secure sufficient durability as a golf club head because it was not possible to obtain sufficient bonding strength' ([0003]). Moreover, the section of the 'Problem to be solved by the invention' includes the statement that 'It is an object of the present invention to provide a hollow golf club head that makes it possible to increase the bonding strength of an outer shell member made of metal and outer shell member made of fiber reinforced plastic' ([0004]). Nevertheless, in the section of the 'Means to solve the problem' ([0005] and [0006]), nothing but the same structure as that of the Invention is stated as the structure to increase the bonding strength between the metallic outer shell member and fiber reinforced plastic outer shell member, and thus the meaning of 'stitching member' remains unclear from such statement.

(B) The following statements are found in the section of 'Embodiment of the invention.'

'In the bonding form shown in Figure 2(a) and (b), the bonding portion 11a of

the metallic outer shell member 11 is adhered to the bonding portion 21a of the fiber reinforced plastic outer shell member 21, a plurality of through holes 13 is provided in the bonding portion 11a of the metallic outer shell member 11, a stitching member 22 made of fiber reinforced plastic is passed through the through hole 13, and the fiber reinforced plastic outer shell member 21 and metallic outer shell member 11 are coupled by the stitching member 22. According to the abovementioned bonding form, as the stitching member 22 binds solidly the fiber reinforced plastic outer shell member 21 to the metallic outer shell member 11, sufficient durability can be obtained as a golf club head. Incidentally, since both the outer shell member 21 and stitching member 22 are plastic and their mutual bonding performance is good, it would be sufficient if these two members are simply in close contact with each other as shown in the figure.' ([0011])

According to Figure 2, in order to increase the bonding strength between the metallic outer shell member and fiber reinforced plastic outer shell member, the following working example is disclosed: a working example wherein the metallic outer shell member 11 and fiber reinforced plastic outer shell member 21 are coupled by providing a plurality of through holes 13 in the bonding portion 11a of the metallic outer shell member 11, the stitching member 22 made of fiber reinforced plastic is passed through this plurality of through holes 13 by winding between the one side (adhesive interface side) and the other side (the opposite surface side thereof), and this stitching member 22 is adhered to the fiber reinforced plastic outer shell member on one side (adhesive interface side). In addition, Figure 2 shows an example where three through holes are provided.

(C) While the stitching member 22 made of fiber reinforced plastic has a good mutual bonding performance with the fiber reinforced plastic outer shell member 21, which is using the same kind of material, mere adhesion with the metallic outer shell member 11, which uses a different kind of material, would be insufficient to obtain a sufficient bonding strength. Therefore, the abovementioned working example presents a form where the fiber reinforced plastic outer shell member 21 is tightly coupled to the metallic outer shell member 11 by passing the stitching member 22 through a plurality of through holes 13 provided in the metallic outer shell member 11 by winding between the adhesive interface side and the opposite surface side thereof, and then adhering the stitching member 22 to the fiber reinforced plastic outer shell member 21.

(D) Since the statements in the detailed explanation of the invention contained in

the Description do not show, as a working example of the Invention, any form where through holes are pierced through both the metallic outer shell member and fiber reinforced plastic outer shell member and a stitching member is passed and pierced through such through holes, it is obvious that the term 'stitching member' is used in a meaning apart from the usual one such as 'a member used to couple a plurality of objects by penetrating through all of them.'

#### C. Background of the application with respect to the Invention

The background of the application with respect to the Invention is as follows. On November 18, 2003, the plaintiff received a notice for reasons of refusal (Exhibit Otsu No. 6) and thus on April 12, 2004, the plaintiff amended the description by submitting a written amendment of proceedings dated on that day (Exhibit Ko No. 5 and Exhibit Otsu No. 12), and further submitted a written opinion dated on the same day (Exhibit Otsu No. 7). However, on February 15, 2005, the plaintiff received a decision of refusal (Exhibit Otsu No. 8). Therefore, on April 7, 2005, the plaintiff filed a request for a trial against an examiner's decision of refusal (Exhibit Otsu No. 9) and submitted a written amendment of proceedings to amend the description (Exhibit Ko No. 6) and another written amendment of proceedings to amend the request for trial (Exhibit Otsu No. 10), both dated May 9 of the same year, in said trial.

In the abovementioned background of the application, the following notice of reasons of refusal was issued. Specifically, the reasons of refusal notified to the effect that the Invention was unclear as to which of the following form it suggests: [i] a form where coupling is performed only by adhering the fiber reinforced plastic outer shell member to the stitching member; [ii] a form where a through hole is also pierced in the fiber reinforced plastic outer shell member and a stitching member is passed through the through hole and thereby the two outer shell members are coupled only by the stitching capability of the stitching member; or [iii] a form where the forms mentioned in [i] and [ii] are used in combination.

In response to this, the plaintiff stated the characteristics of the Invention as follows and amended the constituent feature (d) to its present state: [i] since the stitching member is passed through the adhesive interface between the metallic outer shell member and fiber reinforced plastic outer shell member but is arranged in a manner adhering to the fiber reinforced plastic outer shell member without penetrating it, the strength reduction in the fiber reinforced plastic outer shell member can be avoided; and [ii] by integrally coupling the metallic outer shell member and fiber reinforced plastic outer shell member based on the stitching

member passed through the through holes in the metallic outer shell member, and inhibiting the destruction caused by the stress concentration that occurs when a through hole is provided in the fiber reinforced plastic outer shell member, the bonding strength of the metallic outer shell member and fiber reinforced plastic outer shell member is maximized. In addition, the 'stitching member' is not a structure added by the amendment.

#### D. Summary

Marshaling the abovementioned findings, the following facts can be found.

Since it is obvious that the term 'stitching member' as prescribed in constituent feature (d) is used in a meaning apart from the usual one such as 'a member used to couple a plurality of objects by penetrating all of them' in the first place, it would be unreasonable to limit the content of the term 'stitching member' in accordance with its usual meaning.

As such, the meaning of the 'stitching member' shall be interpreted by also taking into account the technical aspects.

[i] The purpose of adopting the structure of passing the 'stitching member' through a plurality of through holes in the metallic outer shell member by winding it between the one side (adhesive interface side) and the other side (opposite surface side thereof) of the metallic outer shell member is to increase the bonding strength between the metallic outer shell member and fiber reinforced plastic outer shell member. [ii] In order to have the 'stitching member' achieve the effect to increase the bonding strength as mentioned above, it must be bonded (adhered) to the metallic outer shell member at not less than two points of the adhesive interface side (since the 'stitching member' would be bonded to the fiber reinforced plastic outer shell member on the adhesive interface side between the metallic outer shell member and the fiber reinforced plastic outer shell member, the effect to increase the bonding strength will occur by the adhesive property thereof). Furthermore, [iii] in order to bond (adhere) the 'stitching member' at two points, it would be necessary to 'include a form where the stitching member shall reach the opposite surface side through the through hole from the adhesive interface side of the metallic outer shell member and further return to the adhesive interface side through the through hole.

As long as the plaintiff elects to use the term 'stitching member' instead of a simple term such as a 'member' in constituent feature (d), the content of the 'stitching member' will be different from a simple term, 'member,' and should be interpreted with some kind of limitation. Accordingly, if the limited content thereof is interpreted by also taking into account the technical aspects, it is appropriate to

interpret that the 'stitching member' is 'a member passed through a plurality of (two or more) through holes in the metallic outer shell member and bonded (adhered) to the fiber reinforced plastic outer shell member at not less than two points.'

As such, in order to fulfill constituent feature (d), not only would it be necessary that the 'stitching member' 'made of fiber reinforced plastic is, via the through hole,' 'passed through the adhesive interface side between the metallic outer shell member and the fiber reinforced plastic outer shell member and the opposite surface side thereof, thereby coupling said fiber reinforced plastic outer shell member and said metallic outer shell member,' but would it also be necessary that it is a member that 'passes through a plurality of (two or more) through holes in the metallic outer shell member and bonds (adheres) to the fiber reinforced plastic outer shell member at not less than two points,' based on the structure of the 'stitching member.'

(2) Regarding structure <d> of the defendant's products

A. There is no dispute between the parties with respect to the fact that the structure, etc. of the defendant's products is as stated in the attached 'Drawing A and the written explanation thereof' (which is the same document as the attached 'Drawing A and the written explanation thereof' used in the judgment in prior instance) (No. 2, 1(4) of the judgment in prior instance).

With respect to structure <d> of the defendant's products, the plaintiff alleges as follows: 'structure <d> of the defendant's products consists of a configuration where the upper FRP outer shell member 10 and the metallic outer shell member 1 are coupled by passing, via the through hole 7, the short and small strips 8 made of carbon fiber through the adhesive interface side between the upper surface side of the metallic outer shell member 1 and the upper FRP outer shell member 10 and the opposite surface side thereof.' In contrast, the defendant alleges that 'structure <d> of the defendant's products consists of a configuration where the upper FRP outer shell member 10 and the lower FRP outer shell member 9 are coupled by passing, via the through holes 7, the short and small strips 8 made of carbon fiber, which are separated at each of the through holes 7, through the adhesive interface side between the upper surface side of the metallic outer shell member 1 and the upper FRP outer shell member 10, as well as the adhesive interface side between the lower surface side of the metallic outer shell member 1 and the lower FRP outer shell member 9, which is the opposite surface side of the first-mentioned adhesive interface side.'

Although there are no substantial conflicts in the allegations made by the plaintiff and the defendant, the court makes the following determination for confirmation so as to avoid any misunderstanding.

B. In the part of the explanation of the attached 'Drawing A and the written explanation thereof' (hereinafter referred to as the "attached written explanation"), there is a statement that 'As shown in Figures 2 and 3, in these through holes 7, the short and small strips 8 made of carbon fiber are inserted respectively, and each strip 8 is separated from the adjacent strip 8,' and thus structure <d> can be found to comprise the structure of "via the through holes 7, the short and small strips 8 which are separated at each of the through holes 7.'

In addition to the abovementioned statement, the attached written explanation contains the following statement: 'As shown in Figure 3, this lower FRP outer shell member 9 is integrally adhered to the lower surface of the lower edge portion of the strip 8 in the front flange portion 5a. Moreover, the upper FRP outer shell member 10, which forms the crown portion of the golf club head by covering the entire upper surface of the metallic outer shell member 1, is adhered to the upper surface of the top flange portion 5 and is further integrally adhered on the ring-like upper FRP outer shell member 9, and by these two members, the FRP outer shell member is formed. This upper FRP outer shell member 10 is integrally adhered to the upper surface of the upper edge portion of the strip 8, in the front flange portion 5a. Based on the abovementioned structure, as shown in Figure 4, the lower FRP outer shell member 9 and the upper FRP outer shell member 10 are adhered to the metallic outer shell member 1 in a manner sandwiching the top flange portion 5 of the metallic outer shell member 1 from top and bottom, and further, the lower FRP outer shell member 9 and the upper FRP outer shell member 10 are integrally coupled by the strips 8 made of carbon fiber, in the front flange portion 5a.' Furthermore, Figure 3 shows a diagram where each strip 8 is passed through each through hole in the metallic outer shell member 1. As such, structure <d> can be found to comprise the structure where (the short and small strips 8 made of carbon fiber are) 'adhered to the upper FRP outer shell member 10 on the upper surface side and the lower FRP outer shell member 9 on the lower surface side at one point each by piercing one through hole in the adhesive interface side between the upper surface side of the metallic outer shell member 1 and the upper FRP outer shell member 10, as well as in the adhesive interface side between the lower surface side of the metallic outer shell member 1 and the lower FRP outer shell member 9, which is the opposite surface side of the first-mentioned adhesive interface side, thereby coupling the lower FRP outer shell member 10 and the metallic outer shell member 1.' (While the stitching member made of fiber reinforced plastic which is to be coupled with the metallic outer shell member exists on the lower side of the metallic outer shell member in Figure 2 of the

Description, the fiber reinforcement plastic outer shell member which is to be coupled with the metallic outer shell member is shown to exist in the upper portion of the metallic outer shell member, as the upper FRP outer shell member 10, in the attached 'Drawing A and the written explanation thereof.')

Based on the abovementioned findings, structure <d> of the defendant's products can be specified as follows.

'Via the through holes 7, the short and small strips 8 made of carbon fiber, which are separated at each of the through holes 7, are adhered to the upper FRP outer shell member 10 on the upper surface side and the lower FRP outer shell member 9 on the lower surface side at one point each by piercing one through hole in the adhesive interface side between the upper surface side of the metallic outer shell member 1 and the upper FRP outer shell member 10 as well as in the adhesive interface side between the lower surface side of the metallic outer shell member 1 and the lower FRP outer shell member 9, which is the opposite surface side of the first-mentioned adhesive interface side, and thereby coupling the lower FRP outer shell member 10 and the metallic outer shell member 1.'

(3) Literal fulfillment of the term 'stitching member' of constituent feature (d)

As mentioned in (1) above, the 'stitching member' as prescribed in constituent feature (d) of the Invention must be a "member which passes through a plurality of (two or more) through holes in the metallic outer shell member and bonds (adheres) to the fiber reinforced plastic outer shell member at not less than two points.' Meanwhile, the "short and small strips 8 made of carbon fiber" as prescribed in structure <d> of the defendant's products are 'carbon fibers adhered to the upper FRP outer shell member 10 on the upper surface side and the lower FRP outer shell member 9 on the lower surface side at one point each, by piercing through one through hole in the adhesive interface side between the upper surface side of the metallic outer shell member 1 and the upper FRP outer shell member 10 as well as in the adhesive interface side between the lower surface side of the metallic outer shell member 1 and the lower FRP outer shell member 9, which is the opposite surface side of the first-mentioned adhesive interface side.' In other words, the "short and small strips 8 made of carbon fiber" are to be passed through one through hole provided in the metallic outer shell member only once instead of being passed through multiple times (twice or more) a plurality of through holes that penetrate through from one side (adhesive interface side) to the other side (the opposite surface side thereof) of the metallic outer shell member. Moreover, they only adhere to the upper FRP outer shell member 10 on the upper surface side at one point and do not bond (adhere) to



the fiber reinforcement plastic outer shell member at not less than two points. As such, the "short and small strips 8 made of carbon fiber" as prescribed in structure <d> of the defendant's products do not fulfill the requirements to be the 'stitching member' prescribed in constituent feature (d) (i.e. 'a member that is passed through a plurality of (two or more) through holes provided in the metallic outer shell member and bonds (adheres) to the fiber reinforcement plastic outer shell member at not less than two points'). Accordingly, the defendant's products do not literally fulfill constituent feature (d) of the Invention, and there is no literal infringement."

2. Regarding Issue (2) [existence or non-existence of infringement under the doctrine of equivalents]

The content from line 24 of page 45 to line 20 of page 46 of the judgment in prior instance shall be modified as follows.

"This court determines that the '(short and small) strips 8 (made of carbon fiber)' as prescribed in structure <d> of the defendant's products are equivalents of the 'stitching member (made of fiber reinforced plastic)' as prescribed in constituent feature (d) of the Invention. The reasons are as follow.

As mentioned above, the '(short and small) strips 8 (made of carbon fiber)' are passed through one through hole provided in the metallic outer shell member only once and would not be passed through multiple times (twice or more) a plurality of through holes that penetrate through from one side (adhesive interface side) to the other side (opposite surface side thereof) of the metallic outer shell member. Moreover, they are only adhered to the upper fiber reinforced plastic outer shell member (which is equivalent to the 'fiber reinforcement plastic outer shell member' of the Invention) and the lower fiber reinforced plastic outer shell member at one point each at the top and the bottom of the metallic outer shell member and do not bond (adhere) to the fiber reinforced plastic outer shell member at not less than two points.

The abovementioned point is the difference found between the structure of the Invention and that of the defendant's products.

(1) Interchangeability

A. Description

(A) The Description contains the following statement.

'It is an object of the present invention to provide a hollow golf club head that makes it possible to increase the bonding strength of an outer shell member made of metal and an outer shell member made of fiber reinforced plastic' (Section of 'Problem to be solved by the invention,' [0004])

'According to the present invention, in forming a head body of a hollow

construction by bonding an outer shell member made of metal and an outer shell member made of fiber reinforced plastic, the bonding strength between the outer shell member made of metal and the outer shell member made of fiber reinforced plastic can be increased by adhering the bonding portion of the fiber reinforcement outer shell member to the bonding portion of the metallic outer shell member and coupling the fiber reinforced plastic outer shell member and metallic outer shell member by providing a through hole in the bonding portion of the metallic outer shell member and passing the stitching member made of fiber reinforced plastic, via the through hole, through the adhesive interface side between the metallic outer shell member and fiber reinforcement plastic outer shell member and the opposite surface side thereof. Accordingly, it is possible to increase the performance of the golf club including the flying distance, based on the combination of different materials, while securing the durability required of golf club heads (Section of the 'Effect of the invention;' [0019]).

(B) According to the statements in the Description as mentioned in (A) above, the object and working effect (or the principle to solve the problem) aimed at by using a 'stitching member (made of fiber reinforced plastic)' in constituent feature (d) of the Invention can be found to be the increase of the bonding strength between the metallic outer shell member and fiber reinforced plastic outer shell member.

B. Whether or not the object and working effect are achieved in the defendant's products

The "short and small strips 8 made of carbon fiber" as prescribed in structure <d> of the defendant's products are 'carbon fibers adhered to the upper FRP outer shell member 10 on the upper surface side and the lower FRP outer shell member 9 on the lower surface side at one point each, by piercing through one through hole in the adhesive interface side between the upper surface side of the metallic outer shell member 1 and the upper FRP outer shell member 10 as well as in the adhesive interface side between the lower surface side of the metallic outer shell member 1 and the lower FRP outer shell member 9, which is the opposite surface side of the first-mentioned adhesive interface side.' In other words, the "short and small strips 8 made of carbon fiber" are to be passed through one through hole provided in the metallic outer shell member only once instead of being passed through multiple times (twice or more) a plurality of through holes that penetrate through from one side (adhesive interface side) to the other side (the opposite surface side thereof) of the metallic outer shell member.

Since the stitching member used in the Invention is to be passed through multiple times (twice or more) the through hole in the metallic outer shell member and bonded to the fiber reinforced plastic outer shell member on the adhesive interface side between the metallic outer shell member and the fiber reinforcement plastic outer shell member at not less than two points, the effect of increasing the bonding strength shall be inevitably produced by the adhesive property of the stitching member.

Meanwhile, in the defendant's products, in the front flange portion 5a, the lower FRP outer shell member 9 is integrally adhered to the lower surface of the lower edge portion of the strips 8, and the upper FRP outer shell member 10 forming the crown portion is integrally adhered to the upper surface of the upper edge portion of the strips 8. The lower FRP outer shell member 9 and the upper FRP outer shell member 10 are adhered to the metallic outer shell member 1 in a manner sandwiching the top flange portion 5 of the metallic outer shell member 1 from top and bottom.

In the front flange portion 5a, the strips 8 consisting of carbon fiber are passed through one through hole and adhered to the upper FRP outer shell member 10 on the upper surface side and to the lower FRP outer shell member 9 on the lower surface side at one point each, thereby producing the effect of increasing the bonding strength between the outer shell member made of metal (metallic outer shell member 1) and the outer shell member made of fiber reinforced plastic (upper FRP outer shell member 10). Such effect is common with the object and working effect aimed at by using the 'stitching member (made of fiber reinforced plastic)' in the Invention.

In other words, in the defendant's products, shape forming is made in a manner of heating and applying pressure by applying the lower FRP outer shell member 9 not only on the adhesive interface of the metallic outer shell member but also on the opposite surface side thereof, and thus strips 8 are integrally bonded to the fiber reinforced plastic outer shell member (upper FRP outer shell member 9) on the opposite surface side of the adhesive interface side of the metallic outer shell member as well (Exhibit Ko No. 11; entire import of oral argument). Therefore, it is unnecessary to secure the bonding strength by passing the strips 8 multiple times through the through hole provided in the metallic outer shell member.

Accordingly, the 'stitching member (made of fiber reinforced plastic)' as prescribed in constituent feature (d) of the Invention and the 'short and small strips 8 (made of carbon fiber)' as prescribed in structure <d> of the defendant's products share the same object and working effect (or the principle to solve the problem), and thus they are interchangeable.

(2) Ease of interchangeability

The Invention and the defendant's products are common in that they both pass a member made of fiber reinforced plastic through the through hole provided in the metallic outer shell member. Thus, it can be found that, at the time of manufacture of the defendant's products, a person ordinarily skilled in the art could have easily conceived of the idea of replacing the member which shall be passed multiple times through a plurality of through holes provided in the metallic outer shell member and bonded (adhered) to the fiber reinforced plastic outer shell member at not less than two points with a member which shall be passed through one through hole only once and adhered to the upper fiber reinforced plastic outer shell member and lower fiber reinforced plastic outer shell member at one point each at the top and the bottom of the metallic outer shell member. Therefore, ease of interchangeability can be found.

(3) Whether or not the stitching member is a non-essential part

According to the statements in the Description mentioned in (1)A.(A) above, the object and working effect of the Invention is to increase the bonding strength between the metallic outer shell member and fiber reinforced plastic outer shell member. In light of the statements in the scope of claims and detailed explanation of the invention contained in the Description, the Invention is intended to achieve the abovementioned object by providing a through hole in the bonding portion of the metallic outer shell member and passing a member made of fiber reinforced plastic through the through hole. Thus, the important element to solve the problem of the Invention can be found to lie in the structure where a member is 'via the through hole,' 'passed through the adhesive interface side between the metallic outer shell member and the fiber reinforced plastic outer shell member and the opposite surface side thereof and thereby coupling the fiber reinforced plastic outer shell member and the metallic outer shell member.'

In the scope of claims of the Invention, the member to be bonded to is expressed by the term 'stitching member.'

However, as it has already been mentioned in detail, taking into account the following circumstances, the requirement that the relevant member 'is a stitching member' cannot be construed to be the core or characteristic part of the technical idea that serves as the basis for the means to solve the problem of the Invention: [i] the important element to solve the problem of the Invention lies in the structure where a member is 'via the through hole,' 'passed through the adhesive interface side between the metallic outer shell member and the fiber reinforced plastic outer shell member and the opposite surface side thereof, thereby coupling the fiber reinforced plastic outer shell member and the metallic outer shell member' as prescribed in constituent

feature (d); [ii] the term 'stitching member' as used in the Invention has been used in light of the shape and form of passing a member made of fiber reinforced plastic through a metallic outer shell member and is used in a manner obviously different from the usual meaning, and thus it is inappropriate to put emphasis on the meaning of the term 'stitching;' and [iii] as mentioned above, while the meaning of 'stitching member' should be construed as 'a member which shall be passed through a plurality of (two or more) through holes provided in the metallic outer shell member and bonded (adhered) to the fiber reinforced plastic outer shell member at not less than two points' when the technical aspects are taken into account, the requirements of 'a plurality of (two or more) through holes instead of one through hole' and '(bonds (adheres)) to at not less than two points' cannot be found to be important to the extent that it may characterize the Invention.

Accordingly, the fact that the member to be passed through the through hole in the Invention is a stitching member cannot be found to be an essential part of the Invention.

(4) Regarding whether or not the subject products could have been easily inferred

All the evidence submitted in this case is insufficient to find that the defendant's products were identical to a publicly known technology at the time of filing an application for the Patent, or could have been easily inferred by a person ordinarily skilled in the art from publicly known technology at the time of filing an application for the Patent.

(5) Regarding intentional exclusion

A. The background to the application for the Patent is as follows.

On January 11, 2002, the plaintiff filed an application for the Patent (Patent Application No. 2002-4675; Exhibit Ko No. 4), and on July 22, 2003, the application was laid open (Publication of Examined Patent Application No. 2003-205055; Exhibit Otsu No. 5). However, the plaintiff received a notice of reasons for refusal on November 18 of the same year (Exhibit Otsu No. 6).

On April 12, 2004, the plaintiff amended the description by submitting a written amendment of proceedings dated on the same day (Exhibit Ko No. 5 and Exhibit Otsu No. 12), and further submitted a written opinion dated on the same day (Exhibit Otsu No. 7). However, the plaintiff received a decision of refusal on February 15, 2005 (Exhibit Otsu No. 8).

Thus, the plaintiff filed a request for a trial against the examiner's decision of refusal on April 7, 2005 (Exhibit Otsu No. 9) and further submitted a written amendment of proceedings to amend the description (Exhibit Ko No. 6) and

another written amendment of proceedings to amend the request for trial (Exhibit Otsu No. 10), both dated on May 9 of the same year.

The Patent was registered on September 30, 2005 (Exhibits Otsu No. 1 and No. 2).

B. As mentioned in 1.(1)C. above, the plaintiff states that the Invention is characterized by the following points: [i] strength reduction in the fiber reinforced plastic members can be avoided since a stitching member is passed through the adhesive interface between the outer shell member made of metal and the outer shell member made of fiber reinforced plastic, and is arranged in a manner in which it adheres to the outer shell member made of fiber reinforced plastic without penetrating it; and [ii] the bonding strength between the outer shell member made of metal and the outer shell member made of fiber reinforced plastic is maximized by integrally coupling the outer shell member made of metal and the outer shell member made of fiber reinforced plastic based on the stitching member passed through the through hole in the outer shell member made of metal, thereby inhibiting the destruction caused by the stress concentration that occurs when a through hole is provided in the fiber reinforcement plastic outer shell member. However, in light of the background of the application as well as the contents of the written amendments of proceedings and written opinion submitted in such process, the plaintiff cannot be found to have intentionally excluded the structure to replace the 'stitching member' prescribed in the Invention with a member which shall be passed through one through hole and adhered to the FRP outer shell members placed at one point each at the top and the bottom of the metallic outer shell member.

(6) Whether or not the doctrine of equivalents apply

Based on the abovementioned findings, the defendant's products fall within the technical scope of the Invention as having a structure equivalent to that of the Invention."

3. Regarding Issue (3) [Whether or not the Invention lacks inventive steps]

The following description shall be inserted after line 20 of page 46 of the judgment in prior instance, beginning on a new line.

"3. Regarding Issue (3) [Whether or not the Invention lacks inventive steps]

(1) Exhibit Otsu No. 13

A. Invention stated in Exhibit Otsu No. 13

Exhibit Otsu No. 13 discloses a golf club head which comprises a metallic sole portion continuously arranged to the shaft insertion part and a metallic core body which sticks out upward integrally with the sole portion, with a fiber reinforced

plastic outer coat covering the core body; which can be characterized by a through hole which opens toward both front and back sides of the core body in a manner going under the bottom side of the core body and by having fiber reinforced plastic filled continuously to the fiber reinforced plastic serving as an outer coat in the through hole ('Scope of claims'); where a bundle of long reinforcement fibers 10 or rolled cross-shaped knitted fibers is passed through the through hole 7 in advance (Exhibit Otsu No. 13, line 18 of page 5 through line 3 of page 6, and Figures 4 and 5).

B. Difference between the Invention and the invention stated in Exhibit Otsu No. 13

With respect to the abovementioned golf club disclosed in Exhibit Otsu No. 13, the metallic core body is not provided with a through hole, and thus does not correspond to the metallic outer shell member prescribed in the Invention. Moreover, with respect to the metallic sole or metallic core body and metallic sole regarded as a unit, the adhesive interface side between the metallic outer shell member and the fiber reinforced plastic outer shell member as prescribed in the Invention can be found to correspond to the upper side which is in contact with the outer coat. However, since no through hole that penetrates through the upper side in contact with the outer coat and the lower side, which is the opposite surface side thereof, has been provided, it cannot be found that a through hole which penetrates through the adhesive interface side and the opposite surface side thereof as mentioned in the Invention has been provided, and neither the metallic sole nor the metallic core body and metallic sole regarded as a unit corresponds to the metallic outer shell member as prescribed in the Invention. Furthermore, the reinforcement fibers passed through the through hole 7 cannot be regarded as being passed through the adhesive interface side and the opposite surface side thereof via the through hole.

(2) Exhibit Otsu No. 14

A. Invention stated in Exhibit Otsu No. 14

Exhibit Otsu No. 14 discloses a golf club wherein a metallic frame provided with a golf shaft insertion part and a head body made of fiber reinforced plastic are integrally formed and a through hole is provided in the metallic frame for the purpose of increasing the binding force between the head and the metallic frame (Exhibit Otsu No. 14; Scope of claims 1; line 1 through line 7 in the lower left section of page 2; line 9 through line 11 in the upper left section of page 3; and Figures 1 and 2).

B. Difference between the Invention and the invention stated in Exhibit Otsu No. 14

In the invention stated in Exhibit Otsu No. 14, the through hole has been provided in the metallic frame for the purpose of increasing the binding force between the head and metallic frame on the premise that integral formation shall be performed. However, there is no fiber reinforced plastic member which shall be passed through a through hole, and the binding force between the metallic frame and head body made of fiber reinforced plastic will not be increased by passing a fiber reinforced plastic member through the through hole.

(3) Whether or not the Invention could have been easily conceived of by the combination of the invention stated in Exhibit Otsu No. 13 and the invention stated in Exhibit Otsu No. 14

Based on the fact that differences are found between the Invention and the inventions stated in Exhibit Otsu No. 13 and No. 14 as mentioned in (1)B. and (2)B. above respectively, it cannot be found that a person ordinarily skilled in the art could have easily conceived of a hollow golf club (constituent feature (e)) characterized by having a through hole provided in the bonding portion of the outer shell member made of metal (constituent feature (c)) and coupling the outer shell member made of fiber reinforced plastic and the outer shell member made of metal by passing, via the through hole, a stitching member made of fiber reinforced plastic through the adhesive interface side between the metallic outer shell member and fiber reinforced plastic outer shell member and the opposite surface side thereof (constituent feature (d)), based on the combination of the invention stated in Exhibit Otsu No. 13 and the invention stated in Exhibit Otsu No. 14; it cannot be found that the Invention could have been easily conceived of. Accordingly, the Invention does not lack inventive steps, and the Invention cannot be found to be invalid."

#### 4. Conclusion

Based on the abovementioned findings, although the defendant's products do not literally fulfill constituent feature (d) of the Invention, they fall within the technical scope of the Invention by having a structure equivalent to that of the Invention. Moreover, the Invention does not lack inventive steps nor can it be found to be invalid.

With respect to the plaintiff's claims for compensation and damages in this case, further hearings regarding issue (4) (Whether or not a request for compensation is acceptable, and the amount of compensation and damages, etc.) would be necessary to conclusively decide whether or not such claims are acceptable and the content thereof, etc.



Therefore, the court renders an interlocutory judgment in the form of the main text.

Intellectual Property High Court Third Division

Presiding Judge: IIMURA Toshiaki

Judge: NAKADAIRA Ken

Judge: UEDA Hiroyuki

## Product List

1. CYBER STAR POWER BRID CB
2. CYBER STAR POWER BRID FW CB
3. CYBER STAR POWER BRID FL CB
4. CYBER STAR POWER BRID FL FW CB
5. CYBER STAR POWER BRID RX CB
6. CYBER STAR POWER BRID RX FW CB
7. CYBER STAR POWER BRID TX CB

## Patent List

Patent No. 3725481

Application Number: Patent Application No. 2002-4675

Application Date: January 11, 2002

Date of Request of Examination: March 11, 2003

Publication Number: Publication of Unexamined Patent Application No. 2003-205055

Publication Date: July 22, 2003

Registration Date: September 30, 2006

Name of the Invention: Hollow golf club head

([Claim 1]

A hollow golf club head forming the head body of a hollow structure by bonding an outer shell member made of metal and an outer shell member made of fiber reinforced plastic, which can be characterized by adhering the bonding portion of the outer shell member made of metal to the bonding portion of the outer shell member made of fiber reinforced plastic, providing a through hole in the bonding portion of the outer shell member made of metal, and passing through, via the through hole, a stitching member made of fiber reinforced plastic through the adhesive interface side between the metallic outer shell member and fiber reinforced plastic outer shell member and the opposite surface side thereof, and thereby coupling the outer shell member made of fiber reinforced plastic and the outer shell member made of metal.)

Drawing A and the written explanation thereof

[Drawing A]

Figure 1

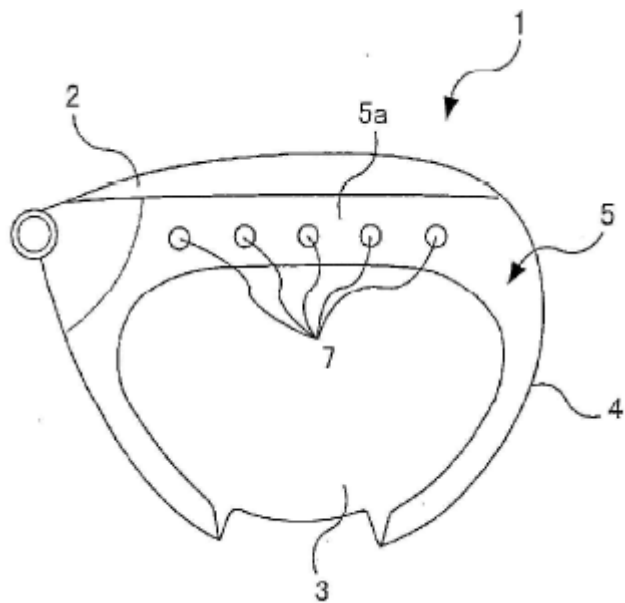
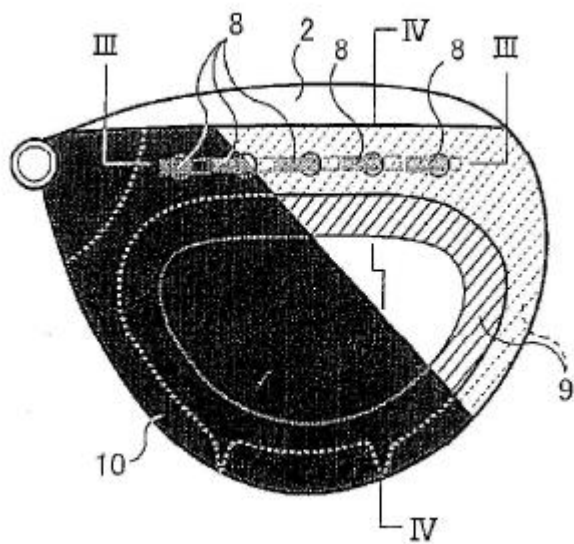


Figure 2



[Drawing A]

Figure 3 (III-III cross-sectional diagram)

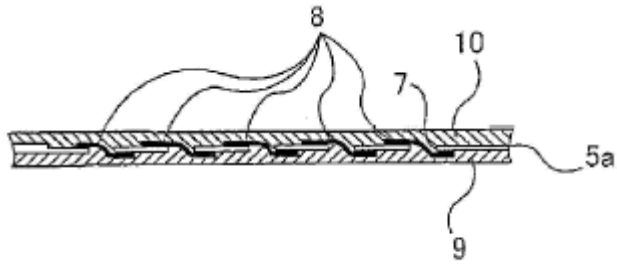


Figure 4 (IV-IV cross sectional diagram)

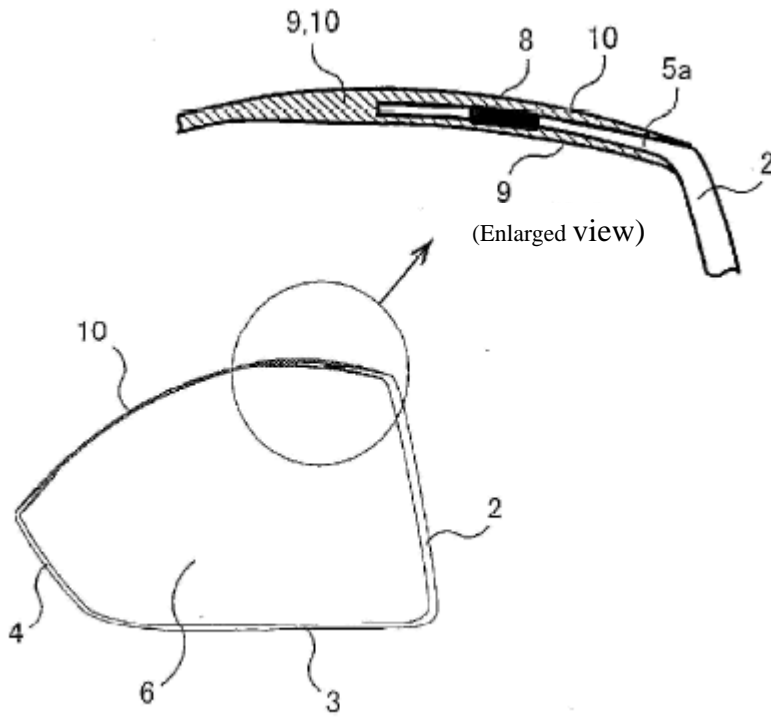


Figure 1 is a two dimensional diagram showing a hollow metallic outer shell member of a golf club head related to Article A; Figure 2 is a two dimensional diagram showing a partially fractured golf club head related to Article A; Figure 3 is a cross sectional diagram along the III-III line indicated in Figure 2; and Figure 4 is a cross sectional diagram along the IV-IV line indicated in Figure 2.

In Figure 1, with respect to the metallic outer shell member 1, its face plane portion 2, bottom surface portion 3, side wall portion 4 and top flange portion 5 are integrally formed by titanium material, and the inside of the metallic outer shell member surrounded by these portions is the space part 6. In the front flange portion 5a adjacent to the face plane portion 2 in the top flange portion 5, five circular through holes 7 are pierced.

As shown in Figures 2 and 3, the short and small strips 8 made of carbon fiber are inserted in these through holes 7, and each strip 8 is separated from the adjacent strip 8 and the upper edge portion and lower edge portion of each strip are placed in line with the upper surface and lower surface of the front flange portion 5a, respectively.

In the lower surface of the top flange portion 5, a circular lower FRP outer shell member 9 made of carbon fiber, which covers the entire lower surface and extends inward beyond the inner periphery edge of the flange, is arranged. As shown in Figure 3, this lower FRP outer shell member 9 is integrally adhered to the lower surface of the lower edge portion of the strips 8 in the front flange portion 5a.

Moreover, the upper FRP outer shell member 10, which forms the crown portion of the golf club head by covering the entire upper surface of the metallic outer shell member 1, is adhered to the upper surface of the top flange portion 5 and is further integrally adhered on the circular lower FRP outer shell member 9, and these two members form the FRP outer shell member. This upper FRP outer shell member 10, which forms the crown portion, is integrally adhered to the upper surface of the upper edge portion of the strips 8 in the front flange portion 5a.

Based on the abovementioned structures, the lower FRP outer shell member 9 and the upper FRP outer shell member 10 are adhered to the metallic outer shell member 1 in a manner sandwiching the top flange portion 5 of the metallic outer shell member 1 from top and bottom and further, the lower FRP outer shell member 9 and the upper FRP outer shell member 10 are integrally coupled by the strips 8 made of carbon fiber in the front flange portion 5a.