



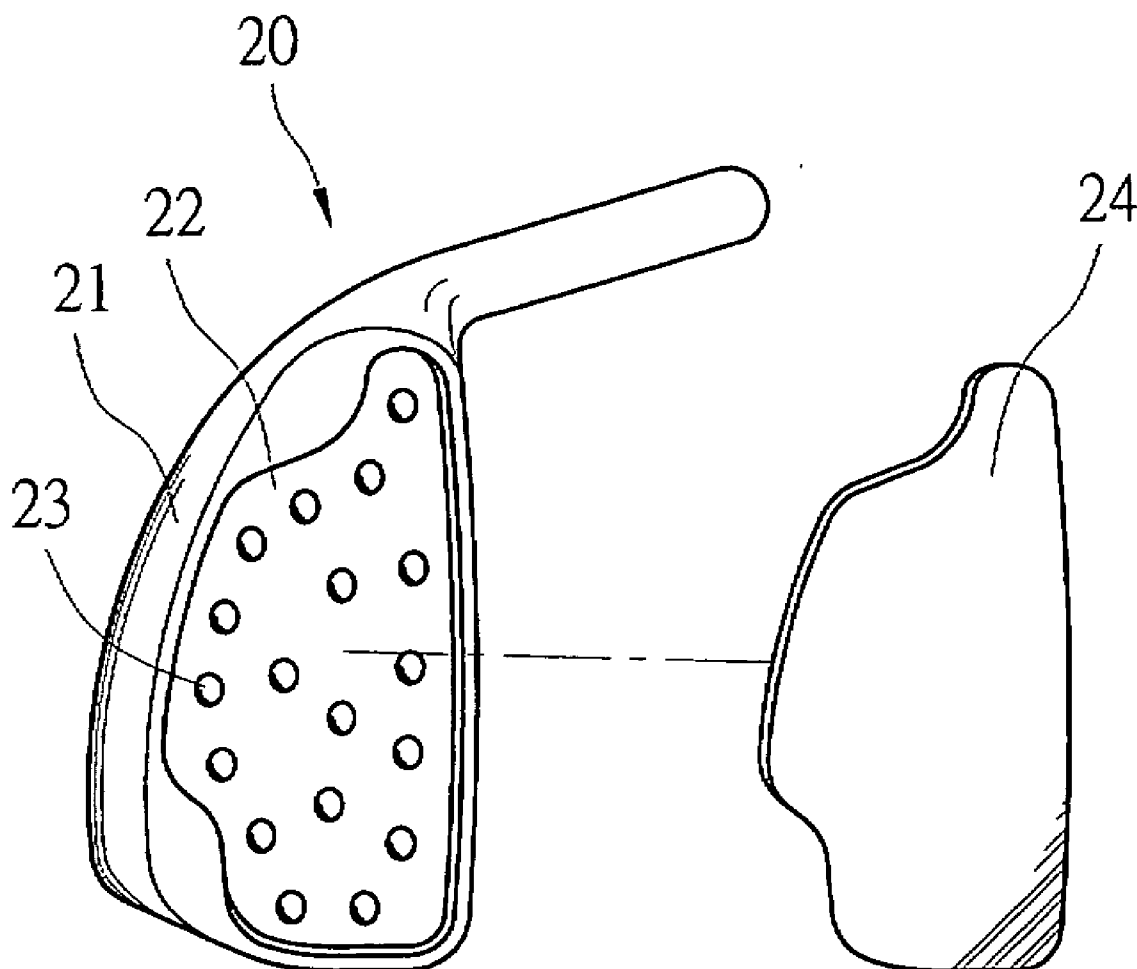
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(19) **United States**(12) **Patent Application Publication****Lai et al.**(10) **Pub. No.: US 2007/0293343 A1**(43) **Pub. Date: Dec. 20, 2007**(54) **BACK RECESS BALANCE WEIGHT
STRUCTURE FOR GOLF CLUB HEADS**(75) Inventors: **Li-Yang Lai**, Kaohsiung City
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A63B 53/00 (2006.01)(52) **U.S. Cl.** **473/332; 473/334; 473/345; 473/350**(57) **ABSTRACT**

A back recess balance weight structure for golf club heads is located on a back side of a golf club head relative to the striking face and includes a back recess body and a sealing cap. The back recess body has a back recess with a plurality of cavities formed therein. The sealing cap covers the back recess by bonding. The structure consists of simple elements. The sealing cap is made from a material of a smaller specific gravity to move the weight of the club head to the optimal position. The adhesive can absorb shock and vibration to form a tight sealing of the sealing cap and the back recess body. Thereby optimal stability and striking accuracy can be achieved during swinging of the golf club.



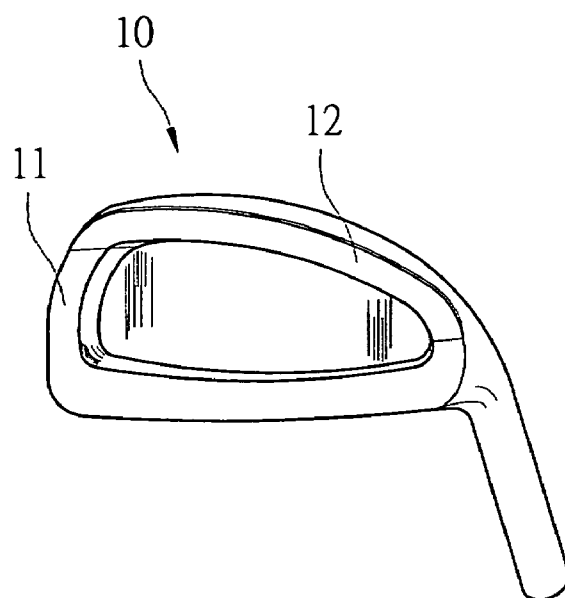


Fig.1 PRIOR ART

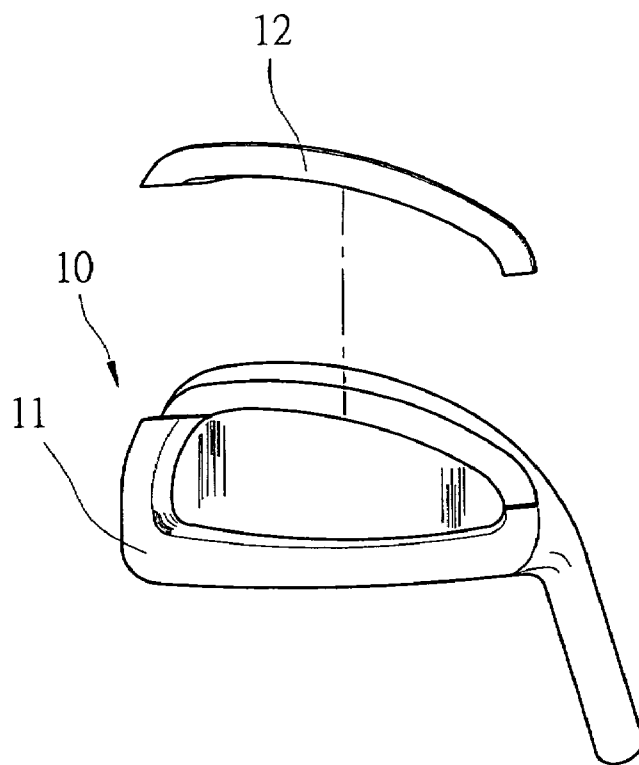


Fig.2 PRIOR ART

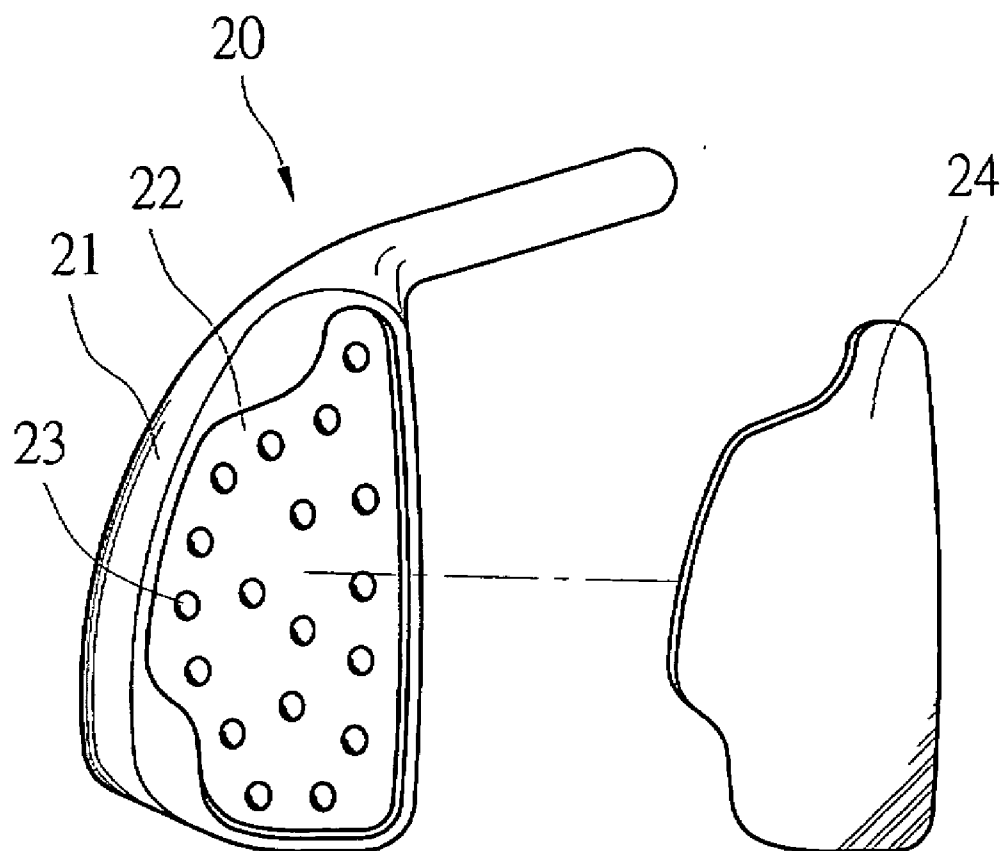


Fig.3

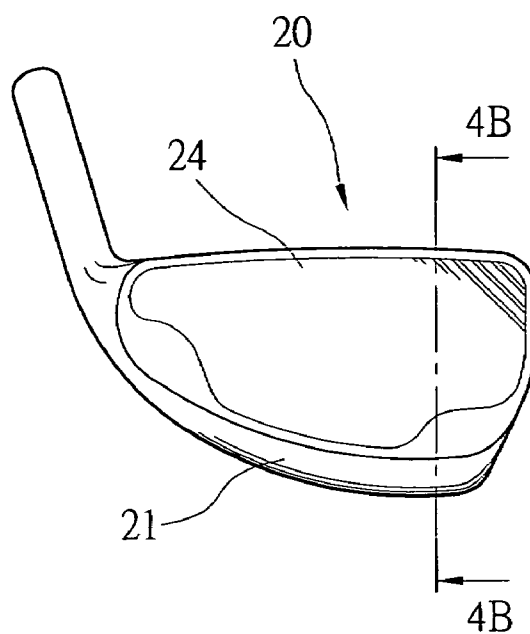


Fig. 4A

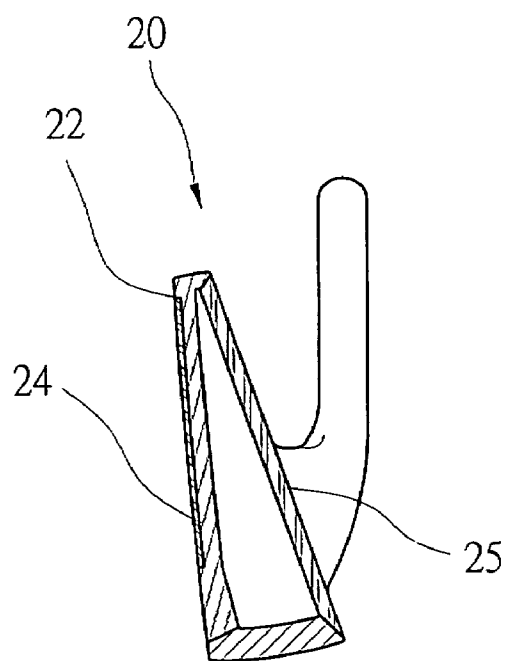


Fig. 4B

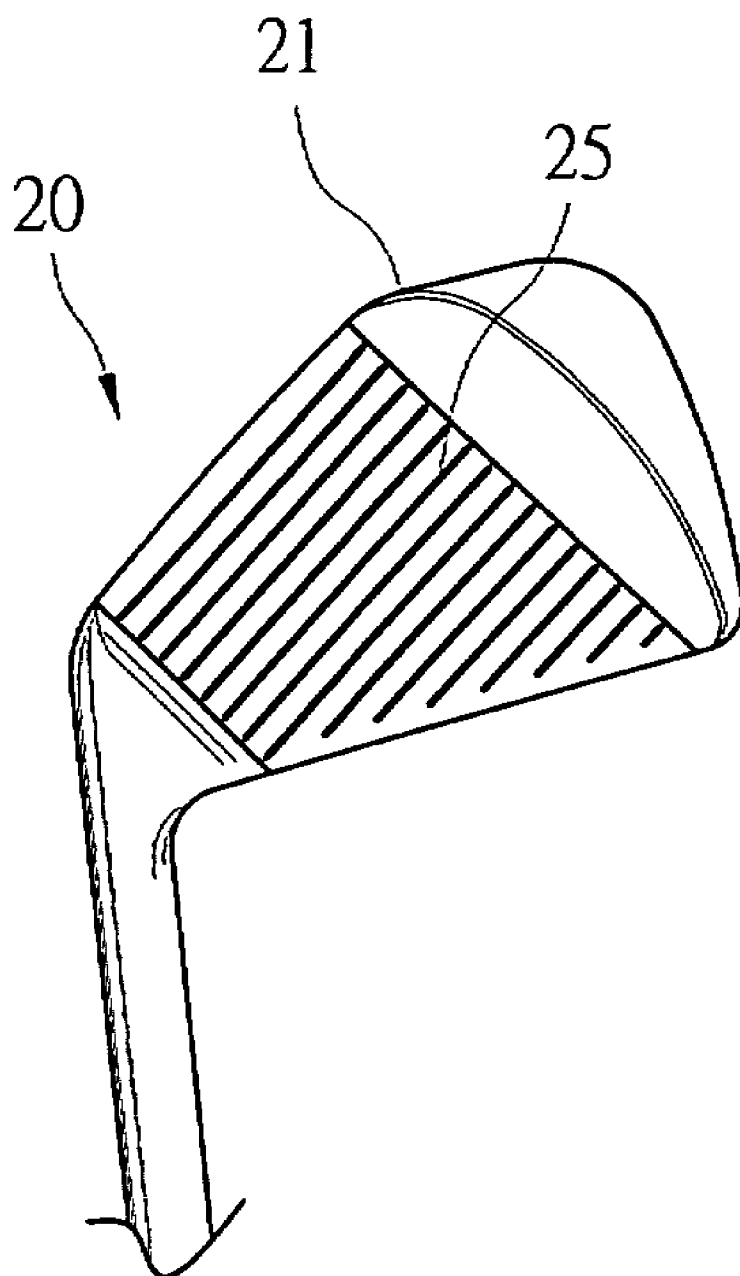


Fig.5

BACK RECESS BALANCE WEIGHT STRUCTURE FOR GOLF CLUB HEADS

FIELD OF THE INVENTION

[0001] The present invention relates to a back recess balance weight structure for golf club heads and particularly to a back recess balance weight structure that has a back recess on the back side of the striking face of a golf club head with a plurality of cavities formed thereon and covered by a sealing cap to reduce the weight of the golf club head and move the balance weight to a required location to shift the gravity center to an optimal position to achieve accurate striking of the golf ball.

BACKGROUND OF THE INVENTION

[0002] Literature records show that golf was invented in England. But in China a game called "Hammering ball" similar to the golf was recorded before the Christian era. It is played by hitting a ball with a wooden hammer into a goal. Where the golf was originated is not important now. These days golf is a very popular sport, and even seen as a high-esteemed sport of gentlemen and ladies in many countries.

[0003] In the past Taiwan was an agricultural society and golf was not a popular recreational activity. As the society progress accelerates and quality of life advances, more and more people have a higher demand on leisure activities. As a result golf becomes more popular. Golf mainly is an individual sport. The golf club has to suit each player according to the physical size and use habit of the player. The design of golf club and club head is especially important. As the swinging power and habit of the player varies greatly, the balance weight of the club head affects the striking result very much.

[0004] The conventional balance weight is mounted in a club head after the striking face has been formed. To alter the balance weight after the club head has been formed, the striking face and the club head have to be disassembled. It takes a lot of time and the integrity of the striking face could be damaged.

[0005] An approach has been proposed to improve the balance weight of the golf club head by increasing the balance weight in another direction on a surface opposite to the striking face. While such an approach can meet user's requirement in some respect, the gravity center still cannot be moved to a desired location to suit the individual user. Swinging of the club also is not desirable. And the stability and accuracy of club swinging decrease.

[0006] Refer to FIGS. 1 and 2 for a conventional golf club head 10. It mainly has a head body 11, a striking face (not shown in the drawings) and a balance weight structure 12. The balance weight structure 12 is located on a back side of the head body 11. After assembly of the golf club head 10 the balance weight structure 12 is fixed. As a result altering of the balance weight structure 12 is not easy, and adjusting the gravity center to the required location is difficult.

SUMMARY OF THE INVENTION

[0007] The primary object of the present invention is to provide a back recess balance weight structure for golf club heads that has a simpler structure and a reduced head weight and can move the balance weight to a required location to shift the gravity center to an optimal position.

[0008] To achieve the foregoing object, the balance weight structure of the invention is located on a back side of a golf club head relative to the striking face. It has a back recess body and a sealing cap. The back recess body contains a back recess with a plurality of cavities formed thereon. The sealing cap is formed with a profile mating the back recess to be coupled with the back recess to form a sealing by bonding through adhesive.

[0009] The structure set forth above can achieve the following functions:

[0010] 1. Striking of the ball is more accurate: As the balance weight structure is located on the back side relative to the striking face of the golf club head, and the back recess body has a plurality of cavities formed in the back recess, the weight of the club head is reduced and the balance weight can be moved to a required location to shift the gravity center to an optimal position. Therefore the accuracy of striking the golf ball can be enhanced.

[0011] 2. Simpler structure: The balance weight consists of the back recess body and the sealing cap. The gravity center of the head can be shifted rearwards at the optimal position. As a result, the stability balance and directional control of swinging of the golf club can be improved.

[0012] The foregoing, as well as additional objects, features and advantages of the invention will be more readily apparent from the following detailed description, which proceeds with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is a perspective view of a conventional golf club head.

[0014] FIG. 2 is an exploded view of a conventional golf club head and a balance weight structure.

[0015] FIG. 3 is a rear exploded view of the present invention.

[0016] FIG. 4A is a rear perspective view of the present invention.

[0017] FIG. 4B is a cross section taken on line 4B-4B in FIG. 4A.

[0018] FIG. 5 is a front perspective view of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0019] Please refer to FIGS. 3 and 5, the back recess balance weight structure for golf club heads according to the invention is located on a back side of a golf club head 20 relative to a striking face 25. It includes at least a back recess body 21 and a sealing cap 24.

[0020] Refer to FIGS. 4A and 4B, the back recess body 21 is coupled on a back side of the striking face 25 and has a back recess 22 in which a plurality of cavities 23 are formed to reduce the weight of the golf club head 20.

[0021] The sealing cap 24 is made from material of a smaller specific gravity (such as aluminum, titanium, high strength fiber material or the like). The sealing cap 24 is bonded to the back recess 22 through adhesive to form a tight sealing.

[0022] The back recess 22 in the back recess body 21 can be formed in any profile desired, such as various geometric shapes. An embodiment of an elongate recess is shown in the drawings.

[0023] The sealing cap **24** can also be formed in any profile desired, such as various geometric shapes. An embodiment shown in the drawings is a profile mating the back recess **22**.

[0024] The back recess **22** also has a plurality of cavities **23**. The number and locations of the cavities **23** are determined by the weight of the club head **20** to be reduced and required moving location of the balance weight. In an embodiment of the invention, the cavities **23** are located on the back recess **22** to shift the gravity center of the club head **20** to an optimal position.

[0025] The sealing cap **24** is bonded tightly to the back recess **22** through a shock-absorbing adhesive (such as epoxy resin or EPS blowing granules) to reduce vibration during striking and absorb vibration.

[0026] FIG. 3 illustrates a balance weight structure located on the back side of the striking face **25** of the golf club head **20**, with a plurality of cavities **23** formed on the back recess **22** of the back recess body **21**. Such a structure can reduce the weight of the club head and move the balance weight to the required location and shift the gravity center to the optimal position. Referring to FIGS. 4A and 4B, the sealing cap **24** is formed in a profile mating the back recess **22** to cover and bond to the back recess **22** through adhesive (such as Epoxy resin or EPS blowing granules) to form a tight sealing. The shock-absorbing adhesive can reduce vibration during swinging of the golf club. The weight and width of the bottom of the club head **20** can also be increased to move the gravity center rearwards to enhance the accuracy of striking.

[0027] In short, the balance weight structure of the invention is located on the back side of the golf club head **20** relative to the striking face **25** with a back recess **22** formed therein and a plurality of cavities **23** formed in the back recess **22**. The back recess **22** further is covered by a sealing

cap **24** of a smaller specific gravity. The sealing cap **24** can be formed in any profile desired to reduce the weight of the golf club head **20** and enhance the aesthetic appeal and expand the sweet spot of the swinging club. The back recess **22** and the sealing cap **24** are bonded tightly by a shock-absorbing adhesive. Such a design allows the gravity center to be shifted to the optimal position of the club head **20**. The width of the bottom of the club head **20** may also be increased to move the gravity center rearwards to enhance the stability and accuracy during swinging of the golf club.

What is claimed is:

1. A back recess balance weight structure for golf club heads being located on a back side of a golf club head relative to a striking face thereof, comprising at least:

a back recess body which is located on the back side relative to the striking face and has a back recess, the back recess having a plurality of cavities; and
a sealing cap covering the back recess by bonding through an adhesive to couple with the back recess body in an integrated manner.

2. The back recess balance weight structure of claim 1, wherein the back recess is formed in a desired profile and located on a desired location.

3. The back recess balance weight structure of claim 1, wherein the number and location of the cavities are formed as required in the back recess.

4. The back recess balance weight structure of claim 1, wherein the sealing cap is made from a material selected from the group consisting of aluminum, titanium and high strength fibers.

5. The back recess balance weight structure of claim 1, wherein the adhesive is selected from the group consisting of Epoxy resin and EPS blowing granules.

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