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(54) **Golf club**

(57) A golf club (10) comprises a head (12) consisting of a body (13) into which a generally L-shaped insert (14) is incorporated, said insert having the upper arm of

the L projecting from the body to constitute a fastening element for the cane (11). The body is advantageously made of silver and the insert is made of titanium.

Tav. I

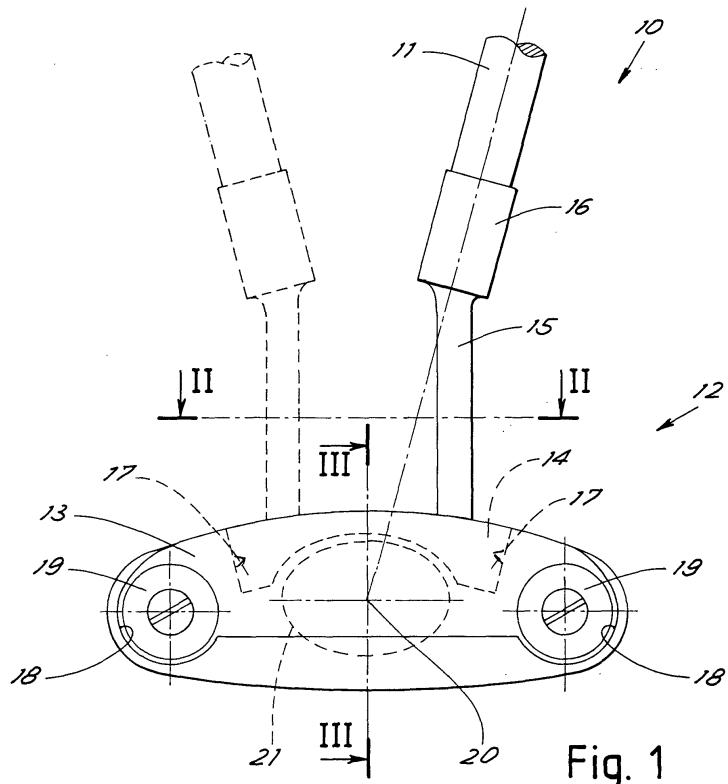


Fig. 1

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Description

[0001] The present invention relates to a golf club provided with a head having an innovative structure.

[0002] In manufacturing golf clubs, features such as elasticity, hysteresis, mechanical strength of the head are of the greatest importance.

[0003] Usually heads are made of steel or similar alloys. Unfortunately, impact characteristics (such as hysteresis) are substantially incompatible with other mechanical characteristics such as mechanical strength.

[0004] It is a general aim of the present invention to obviate the above mentioned drawbacks by providing a golf club with a head having high impact characteristics (such as high and optimal hysteresis) while at the same time showing characteristics of appropriate mechanical strength.

[0005] In view of this aim, in accordance with the invention, a golf club has been conceived which comprises a cane and a head, the head being formed of a body into which a generally L-shaped insert is incorporated, said insert having the upper arm of the L projecting from the body to constitute a fastening element between the cane and head.

[0006] Still in accordance with the invention, making the body of silver material was found exceptionally advantageous.

[0007] For better explaining the innovative principles of the present invention and the advantages it offers over the known art, a possible embodiment applying these principles will be described hereinafter, by way of example, with the aid of the accompanying drawings. In the drawings:

- Fig. 1 is a rear view of the head portion of a golf club in accordance with the invention;
- Fig. 2 is a view taken along line II-II in Fig. 1;
- Fig. 3 is a view taken along line III-III in Fig. 1;
- Fig. 4 is a view, similar to Fig. 1, of a second embodiment applying the principles of the invention.

[0008] With reference to the drawings, a golf club made in accordance with the invention and comprising a cane 11 and a head 12 is shown therein and generally identified by 10.

[0009] The head consists of a body 13 into which a generally L-shaped insert 14 is incorporated. Insert 14 has the upper arm of the L 15 projecting from the head body 13 to constitute the fastening element between the cane and head. For the purpose, arm 15 advantageously terminates with a connecting socket 16.

[0010] Insert 14 is made of a material having a greater mechanical strength than the material forming the body. Conversely, the body is made of a material of high hysteresis.

[0011] In particular, use of silver for making the body was surprisingly found exceptionally advantageous. Thus the insert is incorporated into the casting of the

silver head. Advantageous mechanical features were instead found in using titanium for making the insert.

[0012] A club thus made acquires features of accuracy and throwing power that have been considered as exceptional by skilled players.

[0013] As can be viewed from Fig. 1, the insert advantageously has the L foot curved downwardly and is formed with opposite ends 17 having a bigger height than the centre. This, together with the selected materials, enables achievement of a mass concentration and a low moment of inertia for the striking energy.

[0014] Still advantageously, the head body is made symmetric with respect to a transverse median plane (coincident with line III-III in Fig. 1). In this manner, the same casting die for the head enables right or left clubs to be obtained by merely turning the insert in the die (as shown by way of example in chain line in Fig. 1).

[0015] As diagrammatically shown in Fig. 1, the cane is connected to the insert in such a manner as to have an extension passing through the impact centre, generally denoted at 20 (on the side opposite to the head).

[0016] To protect the silver surface against repeated impacts with the ball, an elliptical plate of hard material, such as steel, and low thickness (1-2 mm) may be advantageously provided to be inserted centrally of the impact region, as denoted at 21 in the figures.

[0017] In an improved embodiment, the head comprises housings 18 disposed close to the ends for receiving balancing weights 19. As well apparent from the figures these weights (of a material of convenient mass) can be made in the form of a plurality of axially bored disks, packed and fastened to the inside of the housing in a removable manner (by screws, for example). If necessary, removability can be inhibited or hindered (by known systems not shown) after arrangement of the weights in an amount considered as appropriate.

[0018] At this point it is apparent that the intended purposes have been achieved by providing a club having high impact and mechanical characteristics that are deemed greatly satisfactory by those skilled in the art.

[0019] Obviously the above description of an embodiment applying the innovative principles of the present invention is given by way of example only and therefore must not be considered as a limitation of the scope of the patent rights herein claimed. For example, the exact conformation of the head may vary depending on specific technical and aesthetic requirements and on the desired club type.

[0020] Shown in Fig. 4 is a second advantageous embodiment of a club in accordance with the invention. The club, generally identified by 110, has a head 112 formed of a body 113 into which an insert 14, already described above, is incorporated, the upper arm 15 of said insert terminating into the fitting socket 16 for connection with cane 111. As in the preceding embodiment, the insert advantageously has a shaped (curved, for example) central lower part to partly surround the central axis 20 of the impact region at a distance, without touching it.

[0021] In the embodiment in Fig. 4, the body 113 (still made of a material of high hysteresis, such as silver) comprises housings 118 that are embodied by holes formed in the head bottom, so that a discontinuity in the side surface of the head is not created. Each hole is advantageously threaded and a correspondingly threaded and replaceable balancing weight 119 is screwed down therein. As shown in chain line in the right-hand housing 118, the weight can also be made in the form of one or more disc-shaped inserts locked by a threaded plug 130 closing the housing. The head of the plug or the threaded weight is provided with an appropriate grasping system (two small holes or grooves, for example) for carrying out untightening and tightening operations with an appropriate tool.

Claims

1. A golf club comprising a cane (11, 111) and a head (12, 112), the head being formed of a body (13, 113) into which a generally L-shaped insert (14) is incorporated, said insert having the upper arm (15) of the L projecting from the body to constitute a fastening element between the cane and head. 20
2. A club as claimed in claim 1, **characterised in that** the insert (14) is made of a material having a greater mechanical resistance than the material forming the body (13, 113). 30
3. A club as claimed in claim 1, **characterised in that** the body (13, 113) is made of silver material.
4. A club as claimed in claim 1, **characterised in that** the insert (14) is made of titanium material. 35
5. A club as claimed in claim 1, **characterised in that** the insert (14) has the foot of the L curved downwardly and is formed with opposite ends (17) of bigger height than the centre. 40
6. A club as claimed in claim 1, **characterised in that** the head body (13, 113) is made symmetric with respect to a transverse median plane. 45
7. A club as claimed in claim 1, **characterised in that** the body (13, 113) has housings (18, 118) close to the ends for receiving balancing weights (19, 119). 50
8. A club as claimed in claim 7, **characterised in that** the weights in the housing are formed of a plurality of axially bored disks, packed and fastened to the inside of the housing in a removable manner. 55
9. A club as claimed in claim 1, **characterised in that** the extension of the cane axis passes through the impact centre (20) of the head.

10. A club as claimed in claim 1, **characterised in that** a plate (21) of hard material such as steel is inserted in the impact region of the head.

11. A club as claimed in claim 7, **characterised in that** the housings (118) are made open in the body (113) bottom.

12. A club as claimed in claim 7, **characterised in that** the housings (118) are in the form of threaded holes into which the balancing weights (119) are screwed down.

13. A club as claimed in claim 12, **characterised in that** the balancing weights (119) are threaded weights to be screwed down in the threaded hole (118).

14. A club as claimed in claim 12, **characterised in that** screwing down of the weights is obtained by a threaded plug (130) closing the housing.

15. A club as claimed in claim 1, **characterised in that** the insert (14) has a shaped central lower part to partly surround the central axis (20) of an impact region of the head at a distance.

Tav. I

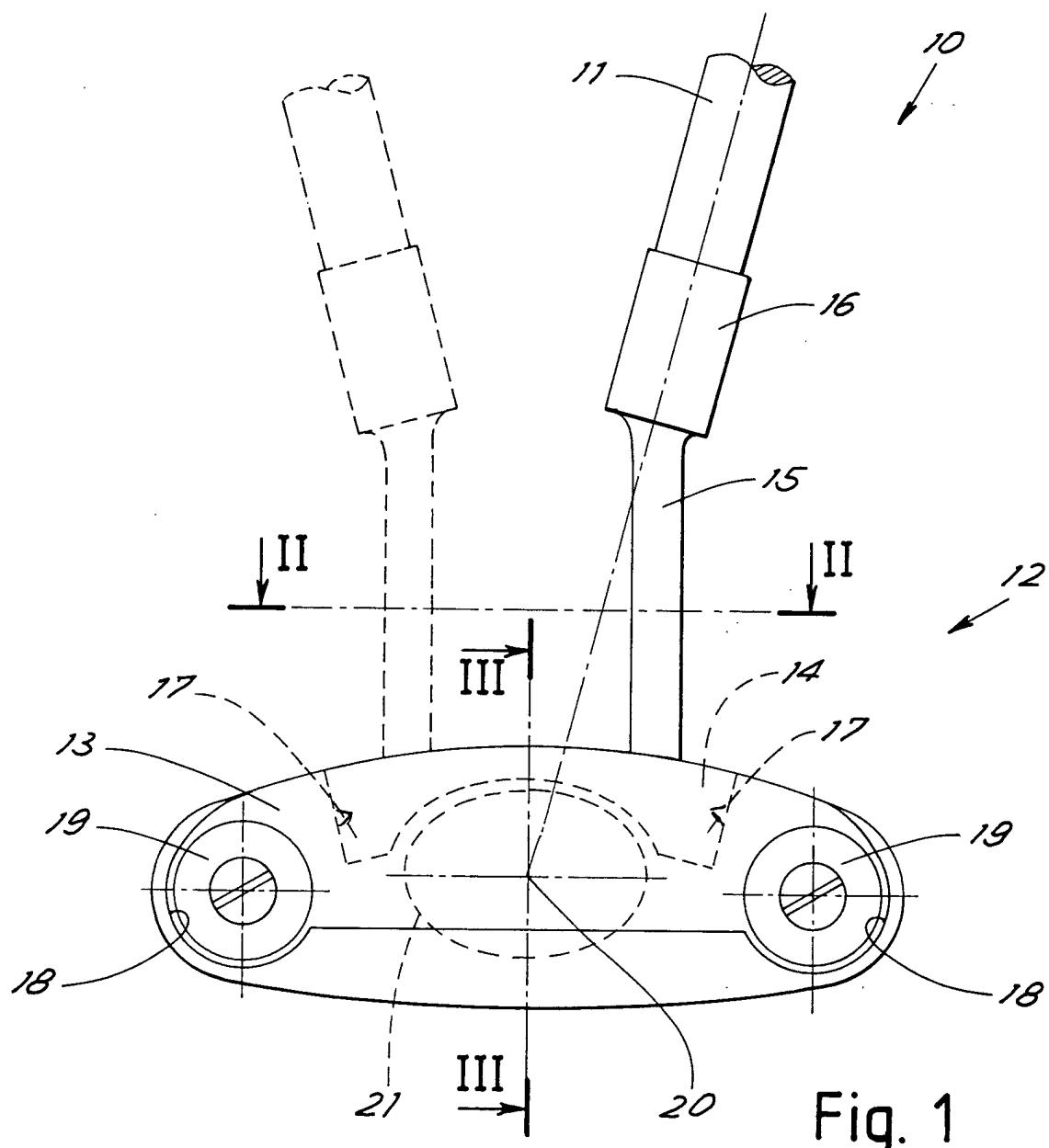


Fig. 1

Tav. II

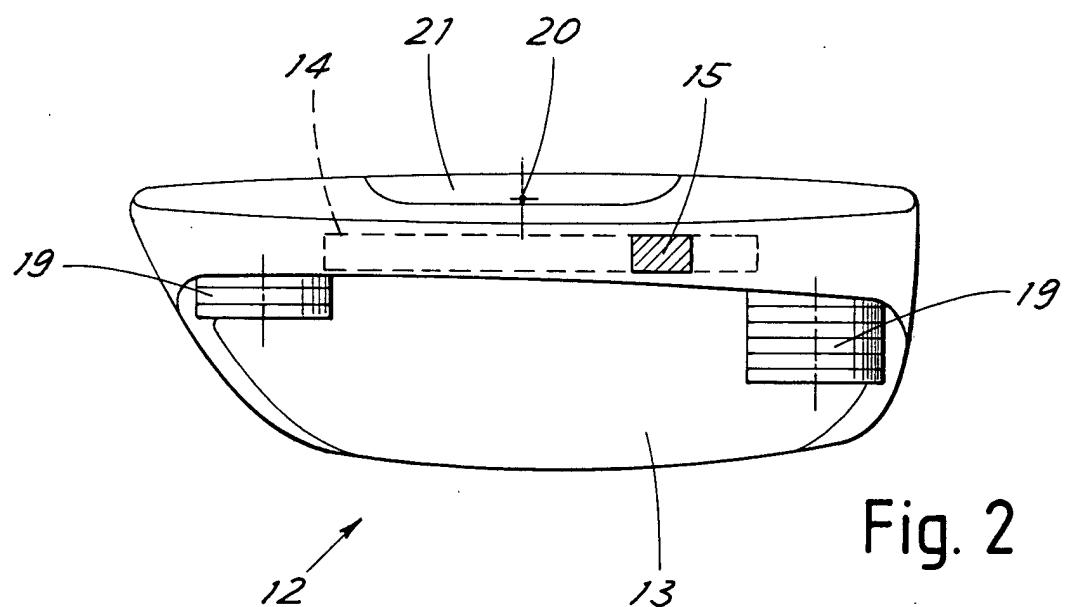


Fig. 2

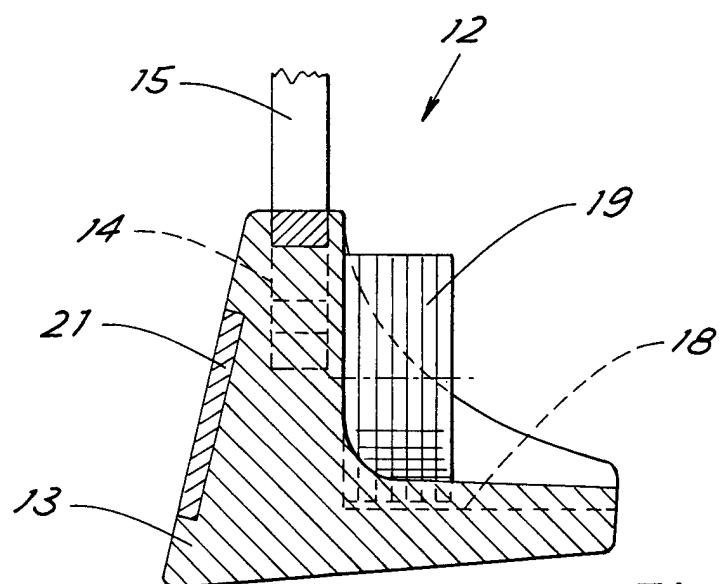


Fig. 3

Tav. III

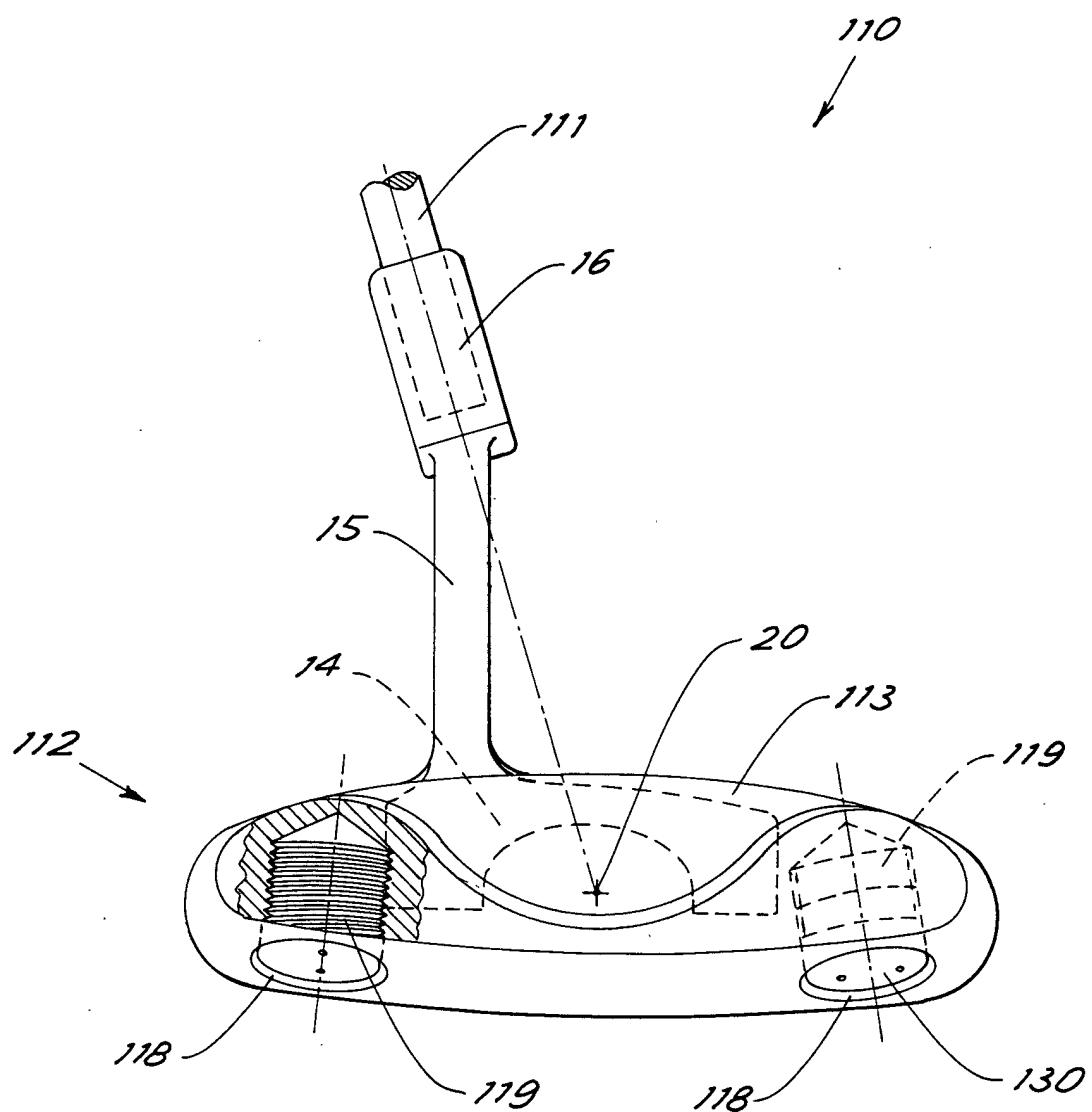


Fig. 4



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EUROPEAN SEARCH REPORT

Application Number

EP 02 02 3821

DOCUMENTS CONSIDERED TO BE RELEVANT		Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	3 December 2002	Knoflacher, N	
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone	T : theory or principle underlying the invention		
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ON EUROPEAN PATENT APPLICATION NO.

EP 02 02 3821

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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