

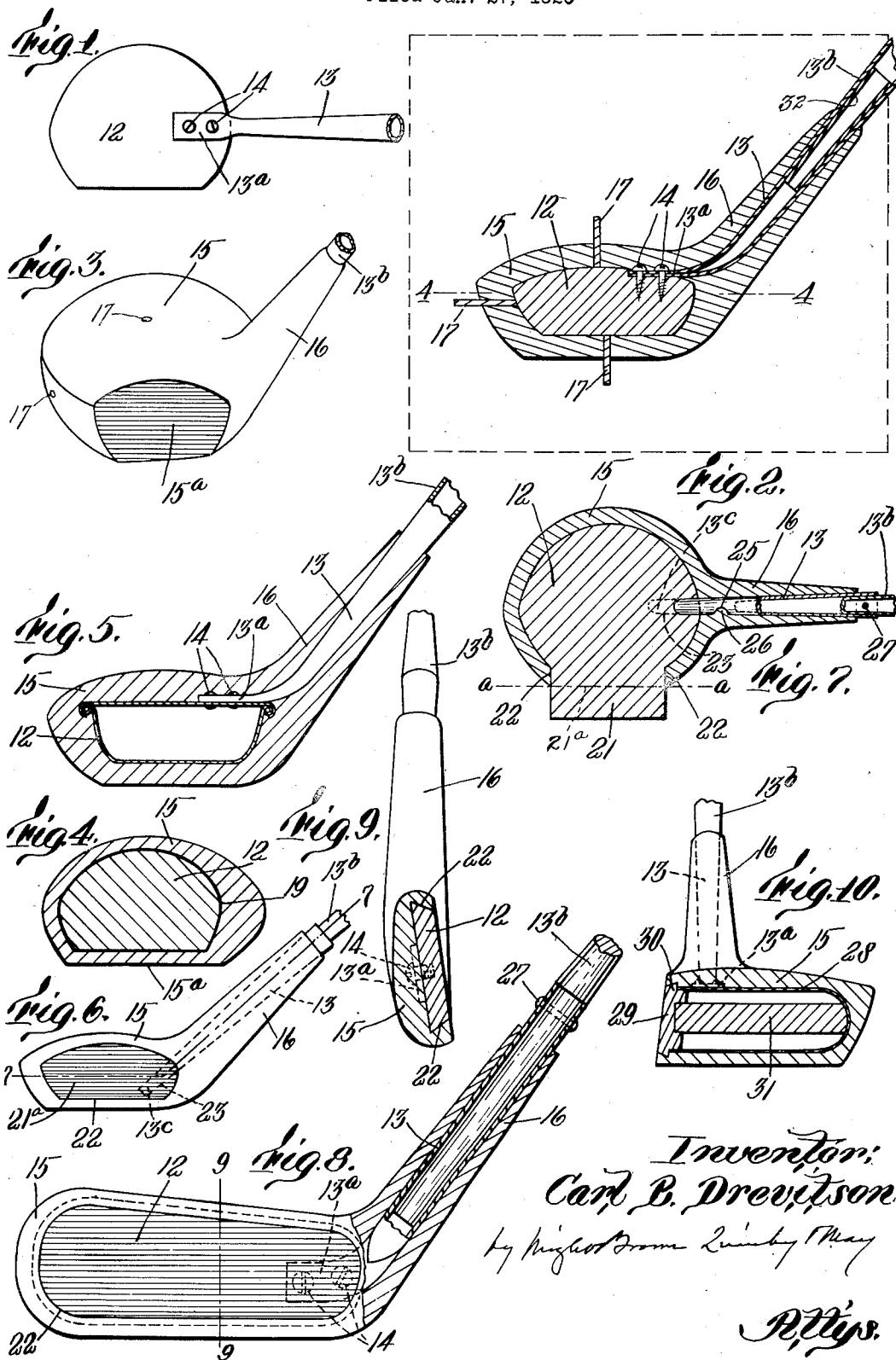
June 19, 1928.

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1,673,973

PLAYING CLUB AND METHOD OF MAKING THE SAME

Filed Jan. 27, 1926



UNITED STATES PATENT OFFICE.

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PLAYING CLUB AND METHOD OF MAKING THE SAME.

Application filed January 27, 1926. Serial No. 34,036.

This invention relates to a playing club, such as a golf club, which includes a head and a handle fixed to and projecting from the head.

5 The object is to provide at a reasonable expense, a playing club which is extremely strong and durable, both as regards the head and the connection or union between the head and handle, and may be made of
10 any weight desired.

I attain this and other related objects by the improved construction and method hereinafter described and claimed, the same involving the casting of an aluminum shell on
15 a core, preferably by a die casting operation, the shell being caused to tightly grip the core by the contraction of the cast metal, which occurs when the metal is solidified by cooling, the cast metal yielding during contraction, so that fracture of the shell is prevented.
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Of the accompanying drawings forming a part of this specification,—

25 Figure 1 is a plan view, showing a core composed of a body portion, and a handle portion engaged therewith, in accordance with the invention.

Figure 2 shows in section the body and handle portions of the core shown by Figure 1, and a shell cast thereon, a die casting mold being indicated by dotted lines.
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Figure 3 shows in perspective the playing club shown in section by Figure 2.

Figure 4 is a section on line 4—4 of Figure 2.
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Figure 5 is a view similar to Figure 2, omitting the mold, and showing a different form of the body portion of the core.

Figure 6 is a side view of another form of playing club, embodying the invention.
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Figure 7 is a section on line 7—7 of Figure 6.

Figure 8 is a side view of another form of playing club, parts being shown in section.
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Figure 9 is a section on line 9—9 of Figure 8.

Figure 10 is a view similar to Figure 5, showing another embodiment of the invention.
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The same reference characters indicate the same parts in all of the figures.

The head of a playing club embodying the invention comprises a core having approximately the external form of the completed head, and a shell of aluminum, or an
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aluminum alloy cast on surfaces of the core, so that the shell, when solidified and contracted by cooling from a molten condition, firmly grips the core and is inseparably
60 united thereto. The core in each of the examples shown by the drawing, includes a body portion and a handle portion engaged with and projecting from the body portion.

Aluminum contracts in cooling to a
65 greater extent than a harder metal, such as steel or stellite, and when cast in the form of a shell on a core, the shell is closely conformed to and grips the core. The ductility of aluminum is such that the shell yields
70 during its contraction on the core, so that fracture of the shell, by its contraction, is prevented.

In Figures 1, 2, 3, and 4, 12 designates the body portion, and 13 the handle portion of
75 the core. The body portion 12 is solid and may be of any suitable material, such as wood, or indurated fiber. The handle portion in this instance, is of metal, and tubular, excepting at its inner end, which may
80 be formed as a shank 13^a, engaged with the body portion by screws 14. Said portions are located in a mold, the outline of which is indicated by dotted lines in Figure 2. External surfaces of the core are separated
85 from internal surfaces of the mold by a space permitting molten aluminum forced into the mold under pressure by a die casting operation, to completely fill the space and form a shell which includes a body portion
90 15, completely enveloping the body portion 12 of the core, and an integral sleeve portion 16, enveloping the handle portion 13. The handle portion has an extension 13^b projecting from the sleeve portion 16,
95 sufficiently to be grasped and manipulated by the user, so that the handle portion of the core is limited to substantially the portion enveloped by the sleeve portion of the shell.

Any suitable means may be provided for
100 locating the core in the mold, such as inwardly projecting locating pins or dowels 17, held in sockets formed for their reception in the mold, and bearing on the body portion 12 of the core. When the molded
105 shell and the core therein are removed from the mold, the pins 17 project from the external surface of the shell, the projecting portions being subsequently cut away flush with the external surface of the shell, as
110 indicated by Figure 3. As shown by Figures 3 and 4, the shell completely encloses

the body portion of the core and is flattened at one side to form a striking face 15^a. When the shell is solidified and contracted by cooling, it grips the enveloped portions of the core and is inseparably united thereto, the body portion 15 of the shell gripping the body portion 12 of the core, while the sleeve portion 16 of the shell grips the handle portion 13 of the core.

In case the body portion of the core is made of a non-refractory material such as wood which is liable to be injured by the heat of the molten metal, a coating 19 (Figure 4) of refractory material, such as asbestos paint, may be applied to said body portion, before it is located in the mold, the coating insulating heat from the core.

The body portion of the core may be hollow and made of sheet metal members, united as indicated by Figure 5, said body portion enclosing an air space.

As indicated by Figures 6 to 10, the body portion of the shell may be cast with an opening, in which some of the material of the body portion of the core is exposed to form a striking face of material differing from that of the shell.

In the club shown by Figures 6 and 7, the head portion 12 of the core is provided with a projection 21, adapted to enter a socket formed for its reception in the mold, the projection closely filling the socket and extending across the cast metal-receiving space at one side of the mold. The projection, when engaged with the mold, locates the head portion 12 in the mold cavity. The cast metal surrounds the projection, the latter forming the margin of an opening 22 in the body portion 15 of the core. The projection may be cut away on the line *a a* (Figure 7), to form a striking face 21^a, flush with the outer surface of the head portion.

In Figures 6 and 7, the inner end 13^c of the handle portion 15, is shown as inserted in a socket 23, in the body portion 12, so that the handle portion is not positively engaged with the body portion. To prevent endwise and turning movement of the handle portion in the shell, I provide means for positively interlocking the handle portion with the shell. To this end the handle portion may be provided with a notch or recess 25, formed by pinching and indenting the handle portion, and the shell is provided with a projection 26, formed by the entrance of the metal into the recess, so that the handle portion is positively engaged with the shell.

In the form shown by Figures 8 and 9, the body portion 12 of the core has flat sides, one of which forms a striking face, and a beveled margin, the body portion being preferably of steel, or other hard metal. The shank 13^a of the handle portion is at-

tached to the inner side of the body portion, and the outer side is flush with the surrounding body portion 15 of the shell.

As shown by Figure 9, the body portion of the shell is interlocked with the beveled margin of the core body 12. In this instance, the handle extension 15^b is formed separately and is inserted in the portion 13 and secured thereto by a rivet 27.

In the form shown by Figure 10, the body portion of the core is of compound construction and includes a hollow sheet metal member 28, to which the handle portion 13 is attached, one end of said member being open, and a relatively thick and rigid facing member 29, formed to fill the open end of the hollow member 28, and provided with a shouldered externally beveled enlargement 30, bearing on the open end of the hollow member and interlocked with the body portion 15 of the cast metal shell. The outer side of the facing member forms a striking face, surrounded by and flush with the marginal face formed by the mold around said member. This form may include also a strut 31, engaged with the inner side of the facing member and the closed end of the hollow member 28, so that stresses due to the impact of the facing member on a golf ball are supported in part by the closed end of the member 28, and the rear side or wall of the shell portion 15. This construction permits the use of any suitable material for the facing member, such as fiber, bakelite, hard rubber, bone, ivory, or any material providing a striking face which is more desirable than one formed on the cast metal shell.

When the handle extension 13^b is a metal tube, it may be provided with an internal reinforcing sleeve 32, as shown by Figure 2.

I claim:

1. A playing-club head comprising a core having approximately the external form of the completed head, and a shell of aluminum cast on surfaces of the core, so that the shell, when contracted by cooling, grips the core, the cast metal yielding during its contraction, so that fracture of the shell is prevented.

2. A playing-club head comprising a non-refractory core having approximately the external form of the completed head, and a shell of aluminum cast on surfaces of the core, so that the shell, when contracted by cooling, grips the core and yields to prevent fracture, the core being provided with a refractory heat-insulating coating on which the shell is cast, said coating preventing injury to the core by heat.

3. A playing-club head comprising a core having approximately the external form of the completed head, and a shell of aluminum cast on surfaces of the core, so that the shell, when solidified and contracted by cooling,

grips the core and yields to prevent fracture, the shell having an opening in which a portion of the core is exposed and forms a striking face.

5 4. A playing club comprising a core including a body portion having approximately the external form of the completed club head, and a handle portion projecting from the body portion, and a shell of aluminum
10 cast on surfaces of the body and handle portions, so that the shell, when contracted by cooling, includes a body portion which grips the body portion of the core, and an integral sleeve portion which grips the handle portion
15 of the core, the cast metal yielding during its contraction, so that fracture of the body and sleeve portions is prevented.

5. A playing club as specified by claim 4, the handle portion being tubular and constituting a socket adapted to receive a separately formed handle extension.
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6. A playing club as specified by claim 4, the handle portion being formed to be interlocked with metal of the sleeve portion of

the shell, to prevent endwise movement of 25 the handle portion in the sleeve portion.

7. The method of making a playing club which consists in locating in a mold cavity, a core which includes a body portion and a tubular handle portion engaged with the 30 body portion, thereby forming a space between all of the enclosed external surfaces of the core and the internal surfaces of the mold, forcing molten aluminum into said space, and thereby forming a shell which includes a body portion conforming to the 35 body portion of the core, and an integral sleeve portion conforming to the handle portion of the core, and allowing the shell to solidify by cooling, so that the body portion 40 and the sleeve portion of the shell grip the body portion and the handle portion of the core, and yield during contraction, so that fracture is prevented.

In testimony whereof I have affixed my 45 signature.

CARL B. DREVITSON.