No. 704,838. Patented July 15, 1902.

E. KEMPSHALL.

PLAYING BALL.

(Application filed May 3, 1902.)

(No Model.)

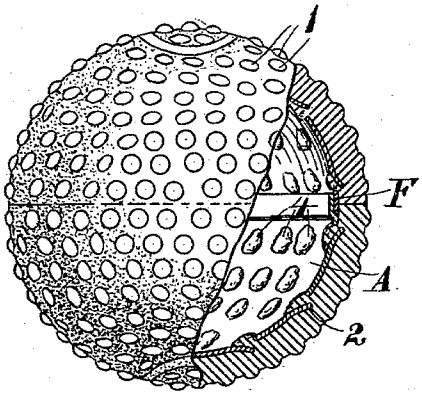
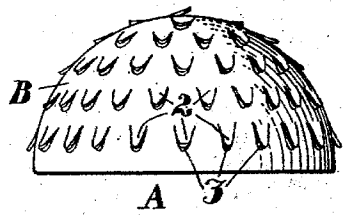


Fig. 1.



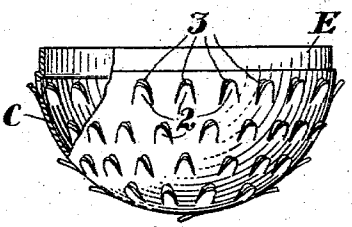
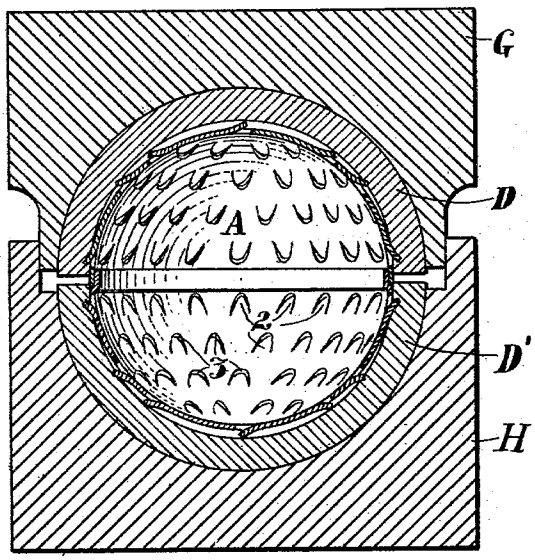


Fig. 2.

Fig. 3.



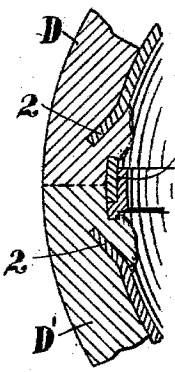


Fig. 4.

Witnesses:
Robert Stead
F. W. Barnacle

Inventor:
Eleazer Kempshall,
By his Attorney.
F. A. Richards

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ELEAZER KEMPSHALL, OF BOSTON, MASSACHUSETTS.

PLAYING-BALL.

SPECIFICATION forming part of Letters Patent No. 704,838, dated July 15, 1902.

Application filed May 3, 1902. Serial No. 105,728. (No model.)

To all whom it may concern:

Be it known that I, ELEAZER KEMPSHALL, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Playing-Balls, of which the following is a specification.

This invention relates to playing-balls, the object being to provide a ball of improved construction and quality especially adapted for use in the game of golf.

According to my present improvements the core is in the form of a stiff hollow body, which I usually make of metal, but which in some cases may be made of other materials, and which is incased within a hard and stiff, but springy shell, so that said shell is elastically supported.

In the drawings accompanying and forming part of this specification, Figure 1 illustrates a complete ball, partly broken away, to disclose the construction. Fig. 2 is a view of separated hemispherical metallic core-segments, showing the barbs thereon. Fig. 3 illustrates a preferred method of manufacturing the balls. Fig. 4 is a fragmentary detail showing the lap-joint of the core-segments.

Similar characters of reference designate like parts in the figures.

A hollow stiff center piece A, preferably of springy metal, is formed, preferably, of hemispherical segments, (designated in Fig. 2 by B and C, respectively.) Distributed over the outer surface of these segments are "struck up" barbs or tongues 2, which penetrate and clench together the plastic shell-segments D and D′ when the components of the ball are assembled. By striking up the material of the center piece A to form the tongues 2 I form openings 3 through said center piece, whereby the resilience thereof is modified and somewhat increased, and these openings also form outlets into or through which some portion of the plastic material of the shell is forced when the latter is pressed into shape. The extent to which the shell material will flow into or through the openings 3 will depend upon the consistency of the shell and the size and number of the openings.

The tongues 2 of the core are struck up, so that they will point toward each other from each pole of the sphere—that is to say, they will point away from the poles of sphere and toward the equator thereof, as clearly illustraied in Figs. 2, 3, and 4. By this arrangement the shell-segments D D′ are not only more permanently anchored to the core, but are less liable to separate at their welded edges.

In the present instance the core-segment C is provided at the edge thereof with a reduced circumferential portion or shoulder E, which registers with the circumferential edge of the corresponding hemispherical segment B, thereby forming a reinforced or lap-joint F.

The outer shell is preferably made of celluloid and consists of hemispherical segments D and D′, compacted and preferably welded together upon the inner springy shell. Preferably each of the shells is thin, and the outer is softer and materially thicker than the inner, as well as having a springy quality. The parts are preferably assembled between heating-dies G and H, which are brought together with great force, so as to effect the weld. By reason of the pressure portions of the plastic celluloid are caused to protrude into the openings 3 in the inner shell and may form keys 4 on the interior of the latter. The tongues or barbs 2 penetrate and clench the celluloid segments together, the barbs upon one of the hemispheres pointing toward those of the other, so that it becomes impossible to separate the segments.

It will be seen that my invention is also of value in cases where the segments are intended to be held together by cement without welding, in which event the edges of the segments D and D′ will be kept pressed together by the oppositely-pointing tongues 2, which are embedded into the material of the shell while the latter is in a plastic condition, and also by the shell being anchored to the core.

It is to be understood that the extent to which the shell material will flow into or through the perforation of the hollow core will depend, of course, upon the consistency of the material of the shell and the size and number of the perforations.

It is to be understood that while the core in this application is shown as made of hemi-

spherical segments of metal with "struck-up" tongues or fins, and which is provided with openings to receive the surplus material of the shell when the latter is compressed upon the core a continuous integral hard material shell which is provided with distributed perforations and projecting anchoring devices of any form for the purpose specified may be employed within the scope and spirit of this invention.

The herein-described process is made the subject-matter of my pending application, No. 104,318, filed April 23, 1902.

Having described my invention, I claim—

1. A hollow playing-ball consisting entirely of two thin shells, whereof the inner shell is of hard, springy material, and the outer is thicker than the inner and consists of hard, plastic material; said inner shell having perforations through which the material of the outer shell protrudes.

2. A playing-ball consisting entirely of a thin, springy perforated metal shell, and a thicker shell thereon formed of hard springy plastic material.

3. A playing-ball consisting entirely of a thin, springy perforated metal shell, and a thicker shell thereon formed of hard springy plastic material, the material of said outer shell protruding into said perforations.

4. A hollow playing-ball consisting wholly of two thin shells, whereof the inner is thinner than the outer and consists of springy metal provided with perforations, said outer shell consisting of plastic material, portions whereof protrude into the perforations.

5. A playing-ball comprising a thin shell of springy metal, said shell being provided throughout with perforations, and a hard springy cover upon said shell.

6. A playing-ball comprising a thin shell of metal provided with perforations, and a shell of celluloid compacted upon said shell, portions of the celluloid protruding into said perforations.

7. A playing-ball comprising a complete shell having perforations and a shell thereon consisting of segments of plastic material welded together at their edges; portions of the plastic material entering said perforations and locking said shells together, and thereby preventing rupture of said plastic shell at the weld.

8. A playing-ball comprising a shell having barbs and a shell formed of joined segments of plastic material; said barbs being embedded in said plastic material and preventing separation of said segments.

9. A playing-ball comprising a thin metal shell having barbs and a shell formed of welded segments of plastic material; said barbs being embedded in said plastic material and preventing separation of said segments.

10. A playing-ball comprising a thin metal shell having barbs, and a shell formed of joined segments of celluloid; said barbs being embedded in said celluloid and preventing separation of said segments.

11. A playing-ball comprising a thin perforated metal shell having barbs and a shell formed of welded segments of plastic material; said barbs being embedded in said plastic material and preventing separation of said segments.

12. A playing-ball comprising a thin metal shell having struck-up barbs and a shell formed of joined welded segments of plastic material; said barbs penetrating and preventing separation of said segments.

13. A playing-ball comprising a shell having barbs and a shell formed of joined segments of plastic material; said barbs being embedded in said plastic material, the barbs in one hemisphere pointing toward those in the other hemisphere, thereby to clench said segments together.

ELEAZER KEMPSHALL.

Witnesses:
F. W. BARNACLO,
B. C. STICKNEY.