No. 699,092. Patented Apr. 29, 1902.

E. KEMPSHALL.

PLAYING BALL.

(Application filed Mar. 28, 1902.)

(No Model.)

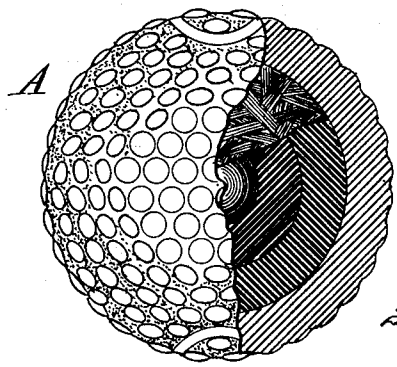


Fig. 1.

Fig. 2.

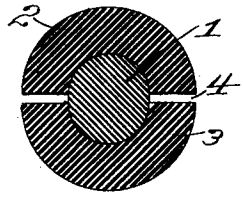


Fig. 3.

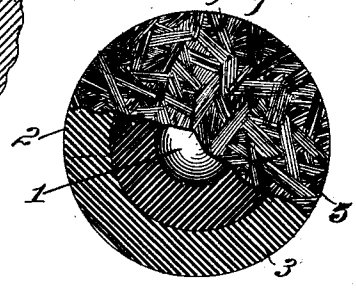


Fig. 4.

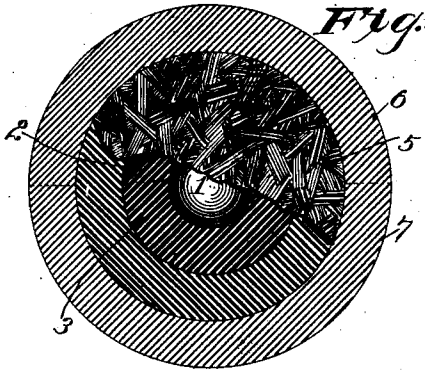


Fig. 5.

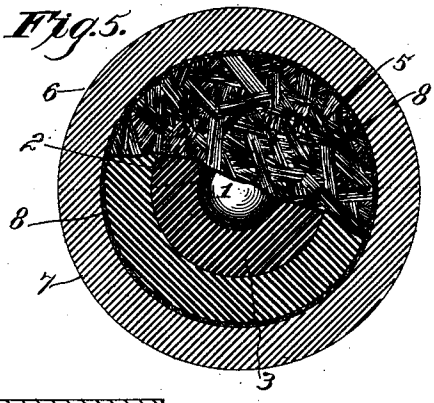
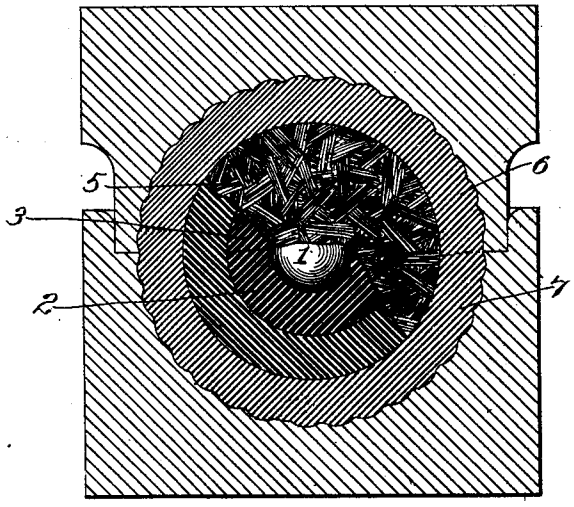


Fig. 6.



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UNITED STATES PATENT OFFICE.

ELEAZER KEMPSHALL, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE KEMPSHALL MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

PLAYING-BALL.

SPECIFICATION forming part of Letters Patent No. 699,092, dated April 29, 1902.

Application filed March 28, 1902. Serial No. 100,428. (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 and processes of manufacturing the same; and it consists, substantially, in the improvements hereinafter particularly described.

The invention has reference more especially to balls employed in the game of golf; but a ball constructed substantially in accordance with my present improvements may be successfully adapted to the requirements of other games involving the use of a ball propelled by means of a stick or other implement in the hands of the operator or player.

One of the principal objects of my present invention is to provide a ball of the character specified possessing strength and stability of structure as well as compactness and one also which is highly resistant to fracture or breakage and otherwise meeting all the essential requirements of the game of golf and other games.

The invention also has other objects, substantially as will hereinafter appear when taken up in connection with the accompanying drawings, wherein—

Figure 1 is a part-sectional view of a golf or similar playing ball constructed and organized in accordance with my present invention; and Fig. 2 is a sectional view of the center piece or filler, having applied thereto in their original form the undersized elastic hemispherical segments comprising a part of the ball structure. Fig. 3 is a full-sectional view of a golf or similar playing ball constructed and organized in accordance with my present invention, the said view being minus the hemispherical segments constituting the outer shell of the ball. Fig. 4 is a similar sectional view of a complete or finished golf or similar playing ball constructed and organized in accordance with my present invention. Fig. 5 is a view similar to Fig. 4, representing a modification of the invention; and Fig. 6 is a sectional view representing one means which may be employed in the process of manufacture of the ball.

Preliminarily to a more detailed description it may be stated that in carrying my present invention into effect I provide a center piece or filler of suitable material and preferably spherical in form, and to or upon which I apply hemispherical segments of suitable elastic material, such as india-rubber, and in turn I apply to the surfaces of the said elastic hemispherical segments a body or core, preferably also spherical in form, and which is preferably of a highly-elastic character. In the present instance the body or core employed is of special construction and may be applied to or upon the elastic hemispherical segments in any suitable way. This special construction of the body or core comprises, essentially, suitable strands or threads of rubber or other elastic material, which are wound upon or about the said elastic hemispherical segments in various directions and in a manner to form as nearly as possible a perfect sphere.

The outer hemispherical segments which constitute the shell or casing of the ball may be constructed of any suitable material, such as gutta-percha or celluloid, preferably the former material, and said hemispherical segments are directly applied to the core or body also in any suitable manner. The inner elastic hemispherical segments in their original form are what may be termed "undersized," or of dimensions a little short of completely inclosing the center piece or filler of the ball, so that when they are first applied to the center piece or filler an annular space is left between the adjacent edges of the segments; but at the time of completion of the ball under pressure the said inner elastic hemispherical segments are distended or stretched in such manner as to force the adjacent edges thereof together, and thus the said edges become practically welded together under the heat and pressure of the dies to which the ball is subjected. One pair of dies is employed to thus apply the said inner elastic hemispherical segments to the center piece or filler of the ball, while another set of larger dies is employed to compress the ball in the final step of the process of manufacture thereof.

The tensioning and winding of the threads of the body or core upon the said inner elastic hemispherical segments may be accomplished in any suitable way, and, likewise, the adjacent edges of the outer hemispherical shell-segments are also practically welded together or united under pressure of the heated finishing-dies preferably employed in the process of manufacture. A playing-ball embodying an organization of elements of the particular character herein specified is especially adapted to the "driving" feature of the golf game and also to the "putting" feature of such game to a marked degree. To render the ball less active, however, under light blows or taps imparted thereto, I sometimes prefer to construct the same with a blanket or lamina of fibrous material interposed between the elastic body or core and the outer shell-segments, and which blanket or lamina may be separately applied or made up of hemispherical segments constituting linings for the outer shell-segments of the ball. The said segments of fibrous material preferably have open mesh, which become permeated or filled up by portions of the material of the outer hemispherical shell-segments, and the fibers of said material become embedded in such material. This construction renders the completed ball somewhat dead to light impulses, which is a desirable quality both in golf-balls as well as in billiard and other similar playing balls.

Specific reference being had to the several parts of the accompanying drawings by the designating characters thereon, A, Fig. 1, represents my improved playing-ball as a whole or in entirety, said ball in the present instance comprising, preferably, a spherical center piece or filler 1, of hard material, as gutta-percha or the like. Applied directly to said center piece or filler in any suitable way are hemispherical segments 2 3, preferably of elastic material, such as solid rubber, said elastic hemispherical segments in their original form being undersized (see Fig. 2) or of dimensions not quite sufficient to completely inclose the center piece or filler, thus leaving an annular space 4 between the adjacent edges of said segments. When the latter elements are applied to the said core or filler, the structure is compressed by means of suitable dies, and the said elastic hemispherical segments are stretched or distended over or about the center piece or filler in such manner as that the adjacent edges thereof are forced into contact and united or welded together by the heat imparted thereto by the dies. Subsequent to this step in the manufacture of the ball a suitable body or core 5 is applied to or upon the exterior surfaces of the said elastic hemispherical segments 2 3, and in the present instance the said body or core is preferably highly elastic and made up or constituted of rubber threads wound upon or about the said segments in various directions under tension, substantially as shown in the accompanying drawings. To the said body or core I apply hemispherical segments 6 and 7, which segments constitute the outer shell of the ball and are of any suitable resilient or hard springy substance, such as gutta-percha or celluloid, preference being given to the former material. The adjacent edges of the said outer hemispherical segments are united or welded together by the heating action of the finishing-dies, to the action of which the whole ball structure is subjected in the final step in the process of manufacture of the said ball. On completion of the ball the inner and outer sets of hemispherical segments are so effectually united or joined together at the meeting edges as to form complete spheres, and thus the ball is rendered perfectly symmetrical throughout, as is apparent. I may so construct the ball as to have the meeting edges of the inner elastic hemispherical segments 2 3 break joint with the meeting edges of the outer hemispherical or shell segments, or the meeting edges of the two sets may be made coincident with each other, as may be desired in practice.

In some instances I preferably employ a blanket or spherical lamina 8, of fibrous material, interposed between the body or core of the ball and the outer or shell segments thereof, (see Fig. 5,) the said blanket or lamina being preferably of textile fabric, the meshes of which become permeated by portions of the material of the said outer hemispherical shell-segments and the fibers of which are embedded in such material and serve to form a sort of interlocking engagement between the said shell-segment and the surface of the body or core of the ball. The use of the blanket or lamina of fibrous material in a ball of this character serves to reduce the activity thereof somewhat under the action of light impulses, as hereinbefore clearly set forth. It is obvious that immaterial changes may be made in the construction of the ball and still be within the scope of my invention. As shown in Fig. 1 and when used for the purposes of the golf game I preferably make the surface of the ball pebbled or brambled.

Having described my invention, I claim—

1. A playing-ball comprising a center piece, a thick, solid soft-rubber envelop upon said center piece, rubber wound continuously in different directions and under tension upon said envelop, and a shell of hard material upon said wound rubber.

2. A playing-ball comprising a center piece, a thick, solid soft-rubber envelop tensioned upon said center piece, rubber wound continuously in different directions upon said envelop and forming a materially larger sphere, and a shell of hard, plastic material upon said wound rubber.

3. A playing-ball comprising a springy center piece, undersized spherical segments of soft rubber drawn over said center piece and caught at their edges, rubber wound continuously in different directions and under ten-

sion upon said segments and forming a materially larger sphere, and a shell of gutta-percha upon said wound rubber.

4. A playing-ball comprising a center piece, undersized segments of soft rubber drawn together upon said center piece and cemented together at their edges, tensioned rubber wound continuously in different directions over said segments and forming a materially larger sphere, and a shell of plastic material holding said wound rubber under compression.

5. A playing-ball comprising a center piece, undersized hemispherical segments of soft rubber drawn together upon said center piece and cemented thereto and also cemented together at their edges, rubber wound thereon continuously in different directions and under tension, and a shell consisting of welded segments of gutta-percha and holding said wound rubber under compression.

6. A playing-ball comprising a center piece, a solid soft-rubber envelop thereon, rubber wound continuously in different directions and under tension upon said envelop, and a fabric-lined plastic shell upon said wound rubber.

7. A playing-ball comprising a center piece, a solid soft-rubber envelop thereon, rubber wound continuously in different directions and under tension upon said envelop, and a fabric-lined plastic shell upon said wound rubber and holding the latter under compression.

8. A playing-ball comprising a center piece of gutta-percha, undersized hemispherical segments of soft rubber drawn together upon said center piece and cemented thereto and also cemented together at their edges, rubber threads wound continuously in different directions upon said soft-rubber hemispheres and forming a materially larger sphere, and a fabric-lined gutta-percha shell holding said rubber threads under compression.

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