

E. KEMPSHALL.
PLAYING BALL.

(Application filed Mar. 27, 1902.)

(No Model.)

Fig. 1.

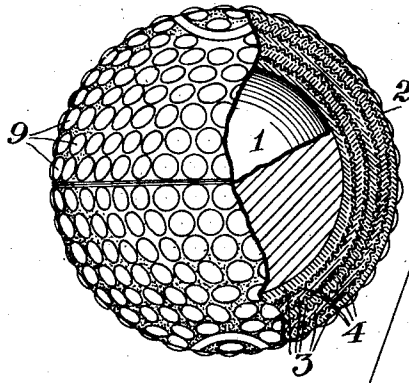


Fig. 1^a.

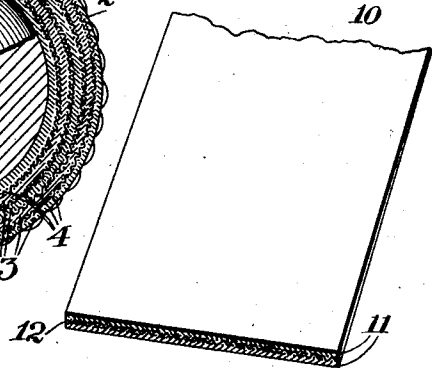


Fig. 2.

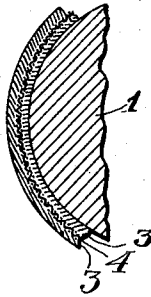


Fig. 3.

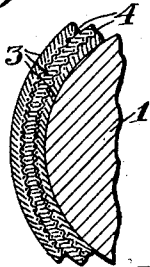


Fig. 4.

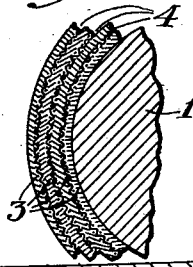


Fig. 5.

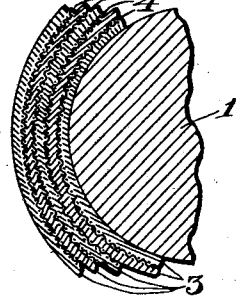
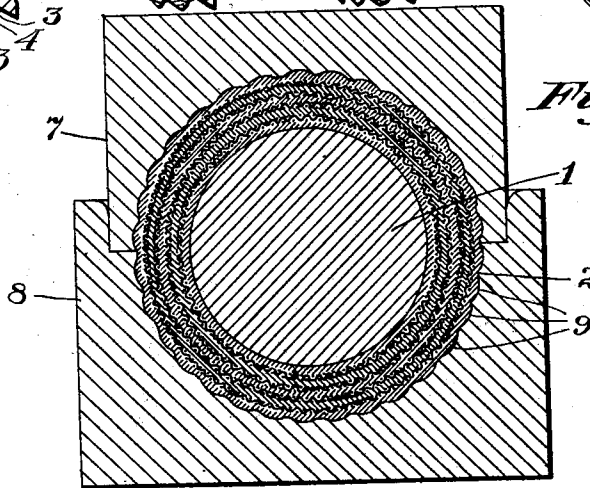


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

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PLAYING-BALL.

SPECIFICATION forming part of Letters Patent No. 700,123, dated May 13, 1902.

Application filed March 27, 1902. Serial No. 100,227. (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 it consists substantially in the improvements hereinafter more particularly described.

The invention has reference more especially to golf and similar playing balls, although the essential features thereof may be successfully adopted in the construction or formation of balls employed in games of other kinds.

One of the objects of my invention is to provide a playing-ball which when struck a hard blow with a club or stick, as in golf, will fly a long distance, but which shall be less active or lively under a comparatively light blow. A playing-ball possessing these characteristics practically meets the essential requirements of the "driving" and "putting" features of the golf-game, while the last-named quality thereof renders the same equally advantageous as a billiard-ball owing to the comparatively short distances such a ball has to travel between cushions of the playing-table.

In the drawings forming part of this specification, Figure 1 is a part-sectional view of a playing-ball embodying the features of my present invention, and Fig. 1^a is a perspective view in detail of a portion of the laminated fabric of which the outer shell of the ball is made up or constructed. Figs. 2 to 5, inclusive, are detail views broken off and in section and indicating the successive steps of application of the hemispherical segments of laminated fabric comprising the outer shell of my improved playing-ball according to one manner of constructing the same. Fig. 6 is a sectional view of one means which may be employed to finish or complete the ball.

Before proceeding with a more detailed description it may be stated that I employ a core for the ball consisting, preferably, of a spherical flexible body having the required amount

of elasticity and the diameter of which may be substantially two-thirds (more or less) the diameter of the completed ball, said core being preferably of rubber or other suitable material. For the outer shell of the ball I preferably employ a suitable fabric struck up into hemispherical segments, which are compressed upon the core or body of the ball, said fabric preferably comprising laminae of gutta-percha and permeable cloth or fibrous material of open mesh. Preferably I first apply to the spherical core or body an envelop made up of hemispherical segments of the fabric mentioned, the said segments being applied with the gutta-percha lamina thereof directly in contact with the surface of said core or body, the lamina of cloth or fibrous material being outermost and interposed between said first-mentioned lamina of gutta-percha and an additional outermost lamina of the same substance, the three laminae constituting the fabric. To the inner hemispherical shell-segments thus applied to the body or core of the ball I successively apply additional hemispherical segments of fabric comprising laminae of the same or substantially the same materials, such segments in each case being preferably first rendered semiplastic and always applied with the cloth or fibrous material directly in contact with the gutta-percha surfaces of the hemispheres applied next in advance thereof. The outer shell may be constructed of any number of alternating laminae of the materials mentioned, and it is of course apparent that each outermost pair or set of hemispherical segments may be applied the one upon the other in any manner desired, it being understood, further, that the innermost and outermost laminae of the fabric thereof are of the hard or springy material of which the fabric is composed. With such an embodiment, parts of the plastic gutta-percha or celluloid laminae are forced through the interstices of the cloth laminae when the ball is subjected to pressure between heated finishing-dies therefor, and after the ball is finished the said outer shell thereof may be said to be made up or constituted of a hard but springy substance, having uniformly distributed or embedded therein at

different diameters substantially concentric series of intersecting veins formed by the threads of the different fibrous laminae. As thus constructed the ball is specially advantageous as a playing-ball in either the games of billiards or golf, as hereinbefore stated.

Specific reference being had to the accompanying drawings by the designating characters thereon, 1 represents the core or filling of my improved playing-ball, the same being of any suitable flexible material and preferably having elasticity. Said core is of comparatively large diameter compared to the diameter of the completed ball, as shown; but it is evident that the same may be varied in size according to the particular use for which the ball may be intended. Preferably I employ a core or filling of medium-soft rubber of spherical form. Upon said core I apply an inclosing shell 2, comprising in the finished ball a series of concentric alternating spheres of a hard and springy substance 3 and a fibrous material 4, preferably of permeable cloth of open mesh. I may apply said outer shell to the core or filling in any suitable way; but preferably I first form hemispherical sections of the alternating materials or substances of which the shell is constructed and then unite corresponding sections at the edges in any suitable way, preferably by pressure of the heating and finishing dies 7 and 8, to the action of which the structure or ball is subjected. The shell may, however, be placed upon the core or filling by first applying gutta-percha directly to the surface of said core or filling while the gutta-percha is in a semi-plastic condition, then applying to such substance a blanket or envelop of fibrous material, and so on alternately to any depth or thickness of shell required. I have herein shown the shell to be made up of five concentric spheres of gutta-percha or analogous substance alternating with four intermediate concentric spheres of fibrous material and beginning and ending with a sphere of the said first-named substance or material. For the purposes of the golf-game I usually make the exterior surface of the ball pebbled or brambled, as at 9. I preferably employ for the manufacture of the inner hemispherical concentric segments of the said outer shell a fabric such as is represented at 10, Fig. 1^a, and consisting of laminae or layers 11 11 of a suitable substance or material, as gutta-percha, intermediate of which is a lamina or layer 12 of fibrous material or permeable

cloth of open mesh, and for the outermost hemispherical segments. I employ a similar fabric minus one of the outer lamina 11. Each outermost set of hemispherical segments is applied to the set in advance thereof with the fibrous lamina of the one in contact with the hard springy lamina of the other, and when the ball is subjected to compression between the finishing-dies parts of the semi-plastic laminae of the shell are forced through the mesh or interstices of the fibrous laminae, and thus the constituency of the compressed shell will comprise what may be termed "spherical strata" of intersecting fibrous veins of different diameters. A certain interlocking engagement also takes place between the exceedingly finely divided portions of adjacent gutta-percha laminae, which are forced through the interstices or meshes of the cloth from both directions, the effect of which is to give greater stability to the finished ball and to prevent displacement of the spherical layers of laminae of the said outer shell.

Having described my invention, I claim—

1. A playing-ball comprising a shell which consists of laminae of gutta-percha and fibrous material in alternation.

2. A playing-ball comprising a springy core and a shell thereon consisting of laminae of gutta-percha and laminae of fabric alternating with the gutta-percha laminae.

3. A playing-ball comprising a springy core and a shell holding the same under compression and consisting of laminae of fabric and laminae of gutta-percha in alternation.

4. A playing-ball comprising a springy core and a shell thereon consisting of five laminae of gutta-percha and four laminae of fabric alternating with the gutta-percha laminae.

5. A playing-ball comprising a springy core and a shell thereon consisting of laminae of gutta-percha and laminae of cloth of open mesh alternating with said gutta-percha laminae; said laminae being interlocked.

6. A playing-ball comprising a springy core and a shell consisting of laminae of gutta-percha and laminae of cloth of open mesh alternating with said gutta-percha laminae, said laminae being interlocked, and said core being held under compression by said shell.

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