No. 698,515. Patented Apr. 29, 1902.

E. KEMPSHALL.

GOLF BALL.

(Application filed Mar. 25, 1902.)

(No Model.)

Fig. 1.

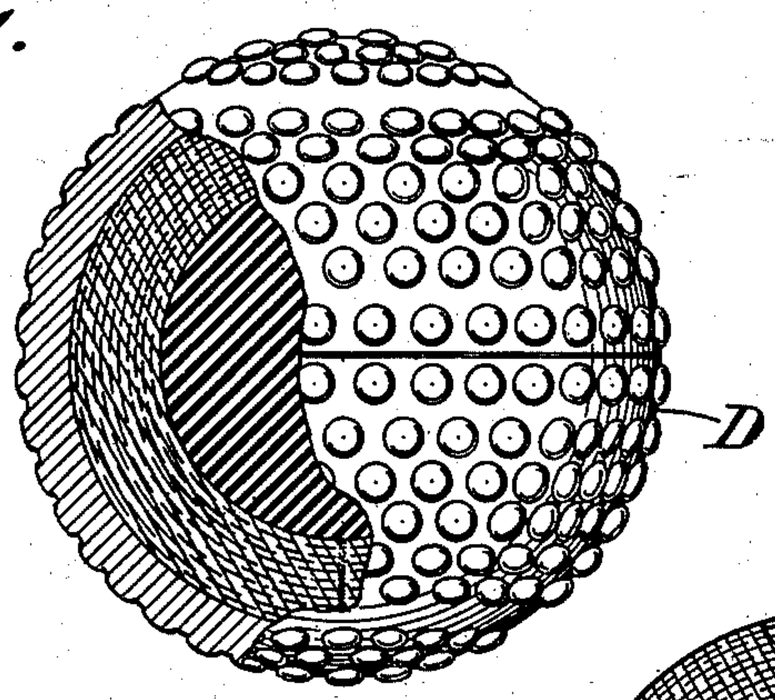


Fig. 2.

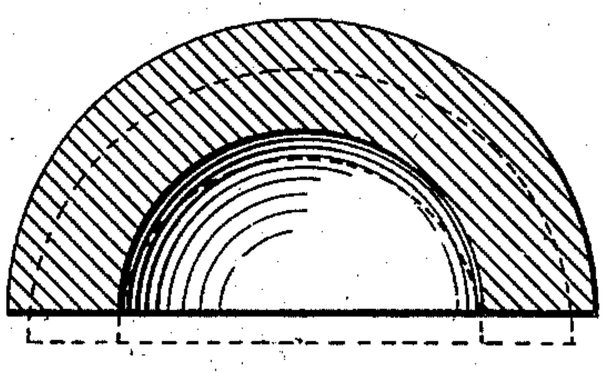


Fig. 3.

Fig. 4.

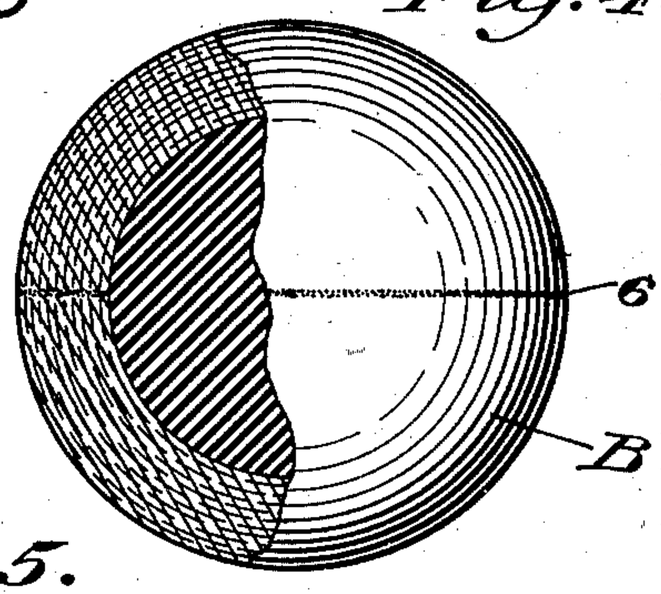
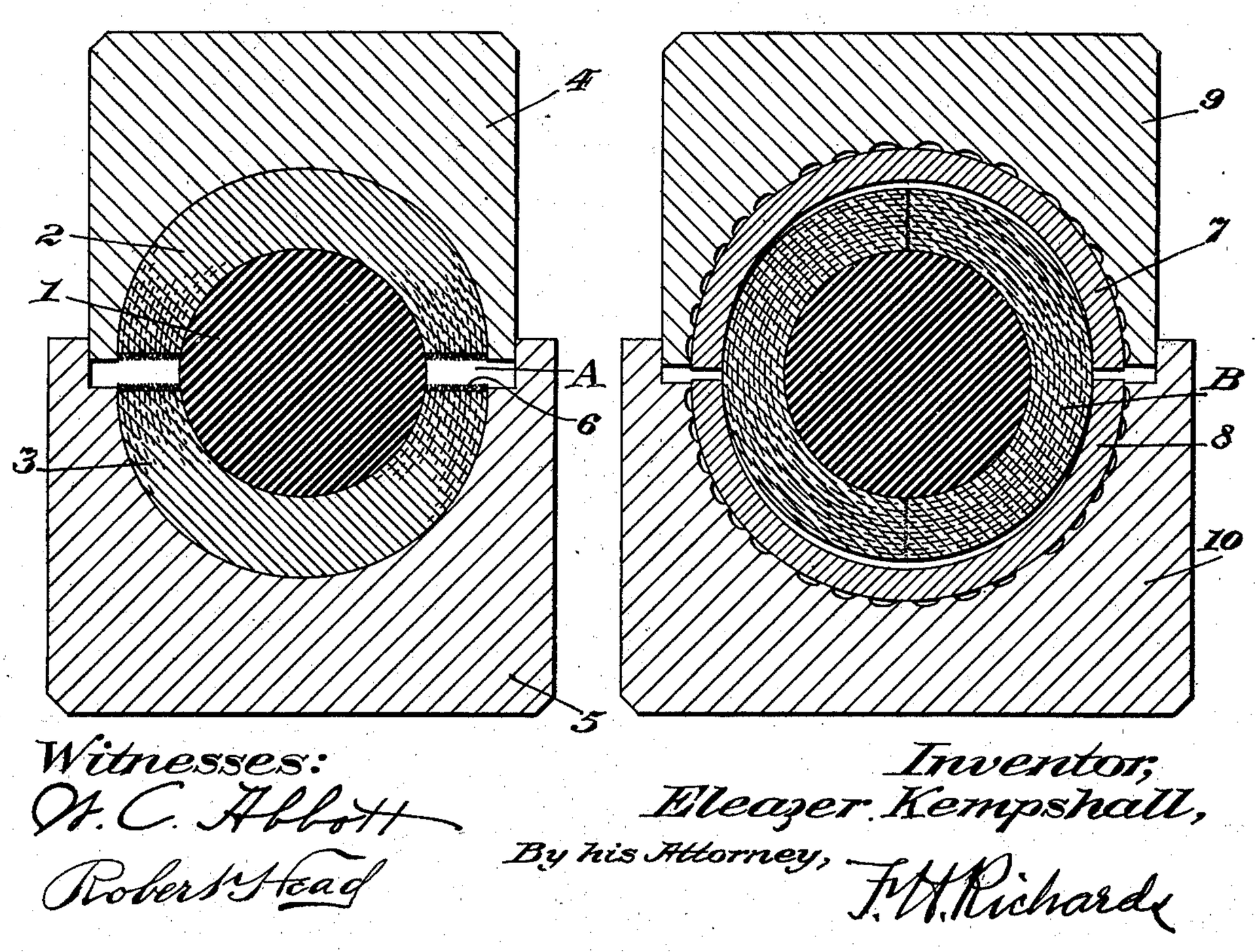


Fig. 5.



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UNITED STATES PATENT OFFICE.

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

GOLF-BALL.

SPECIFICATION forming part of Letters Patent No. 698,515, dated April 29, 1902.

Application filed March 25, 1902. Serial No. 99,931. (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 Golf-Balls, of which the following is a specification.

This invention relates to playing-balls, and especially to those used in the game of golf. Its object is to furnish at low cost a ball having excellent flying qualities when struck a powerful blow, yet being "dead" to a light blow, thereby meeting the requirements of the game.

The invention also has other objects in view, as will hereinafter more fully appear.

In the drawings forming part of this specification, Figure 1 is a view, partly in section, of my improved ball. Fig. 2 is a sectional view of an undersized half shell or sphere made of soft rubber and showing in dotted lines the form to which said half-sphere is drawn in making a playing-ball therefrom. Fig. 3 shows a pair of the Fig. 2 blanks placed upon a hard core and the whole inclosed in drawing-dies. Fig. 4 is a view of the ball produced by the Fig. 3 operation, and Fig. 5 is a view illustrating one manner of forming a shell upon a Fig. 4 ball so as to produce the Fig. 1 article.

Similar characters of reference designate like parts in the drawings.

Upon a spherical core 1, which is preferably gutta-percha, but may be of any suitable hard material, I place cups 2 and 3, of highly-vulcanized soft rubber, each of said cups approaching the form of a hemisphere, but being slightly undersized. I cement these upon said core 1 and place the structure thus formed between drawing-dies 4 and 5, Fig. 3, from which figures it will be seen that the said rubber cups form an incomplete envelop for the core 1, an annular space A showing between the cups. The dies are now brought together with sufficient force to draw the rubber shells together, and as their edges are cemented at 6 I thereby effect a complete union of them in the formation of a complete rubber envelop B upon the core 1, as at Fig. 4. It will be understood that the dies 4 and 5 are held together long enough for the cement to harden, so as to permanently unite the half-spheres 2 and 3. Thus I produce a ball having a hard core and a solid soft-rubber envelop tensioned thereon, which ball may be used without further treatment or covering, if desired, and possesses many valuable qualities arising largely from the tense condition of the rubber envelop.

In forming a golf-ball I place the envelop B between hemispherical segments 7 and 8, of plastic material, such as gutta-percha or celluloid, preferably the latter, and inclose the whole in heating and compressing dies 9 and 10, the celluloid being rendered plastic by the heat and the dies being brought together with sufficient force to place the sphere B under suitable compression, the complete celluloid shell being indicated at D, Fig. 1.

Thus it will be seen that I form in an inexpensive manner a golf-ball having the quality of being resilient under a heavy blow, but dead under a light blow, the rubber being under a longitudinal tension and also being compressed between the hard shell and the hard core, whereby a particularly efficient ball is produced. An important feature of my invention resides in the accurate centering of the core 1 within the completed golf-ball, it being apparent that said core must be exactly central in the rubber envelop 1 and also that the latter must be exactly central in the shell D, thus enabling the ball to fly accurately through the air and also to move accurately in "putting," which is highly necessary in this game.

While I prefer to use undersized hemispheres 2 and 3, of rubber, still other material than rubber may be used and be within the scope of my improvements.

It will be observed that my improved ball comprises a core and undersized hemispherical sections of elastic material drawn together upon said core and caught at their edges, making a permanent entire sphere the diameter whereof is illustrated as less than that of said sections or segments in their original condition, although it is not essential in all ways of practicing my invention that there be a substantial change in the diameter of the segments so long as they are drawn together upon a hard core. Other hard shells

than those illustrated may be used, and, if desired, the ball illustrated at Fig. 4 may be used in certain games without a shell.

Having described my invention, I claim—

1. A playing-ball comprising a hard sphere and undersized segments of soft rubber drawn together upon said sphere so that their edges meet, said edges being caught together.

2. A playing-ball comprising a hard sphere and undersized segments of soft rubber drawn together upon said sphere and cemented together at their edges.

3. A playing-ball comprising a hard sphere and undersized segments of soft rubber drawn together upon said sphere and cemented thereto, and also cemented together at their edges.

4. A playing-ball comprising a hard sphere of gutta-percha and undersized hemispheres of highly-vulcanized soft rubber cemented to said sphere and drawn together thereon until their edges meet, said edges being cemented together.

5. A playing-ball comprising a sphere, undersized segments of elastic material drawn together upon said sphere, so that their edges meet, and a shell of relatively harder material upon said segments.

6. A playing-ball comprising a hard sphere, undersized segments of soft rubber drawn together upon said sphere and having their edges caught together, and a shell of plastic material upon said segments.

7. A playing-ball comprising a sphere of gutta-percha, undersized thick segments of soft rubber cemented upon said sphere and drawn together thereon and having their edges caught together, and a shell of celluloid upon said segments.

8. A playing-ball comprising a hard sphere, undersized segments of soft rubber drawn together upon said sphere and having their edges joined, and a shell of plastic material holding said segments under compression.

9. A playing-ball comprising a sphere of hard, springy material, undersized hemispherical segments of soft rubber drawn together upon said sphere, and a shell consisting of welded hemispherical segments of celluloid holding said soft rubber under compression.

10. A playing-ball comprising a core and undersized hemispherical segments of elastic material drawn together upon said core and caught at their edges, forming a ball whose diameter is less than that of said segments in their original or untensioned condition.

11. A ball comprising a core and undersized hemispherical segments of soft rubber drawn together upon said core and caught at their edges and cemented to said core, forming a ball whose diameter is less than that of said segments in their original or untensioned condition, and a shell of harder material upon said segments.

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