

F. H. RICHARDS.
GOLF BALL.

(Application filed Mar. 24, 1902.)

(No Model.)

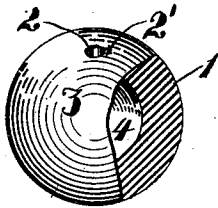


Fig. 1.

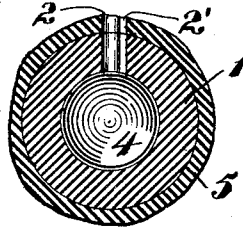


Fig. 2.

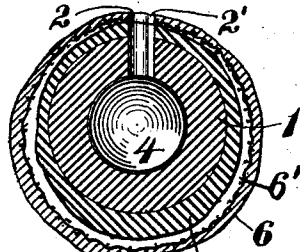


Fig. 3.

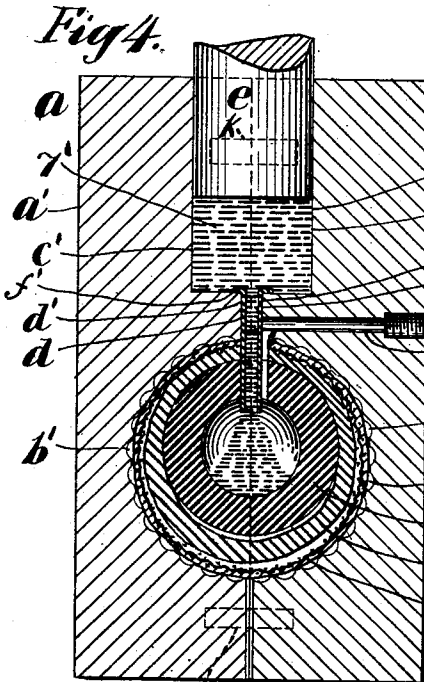


Fig. 4.

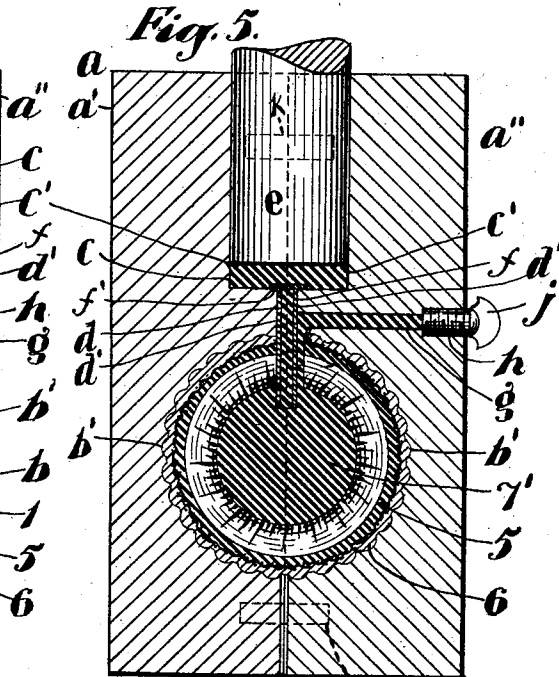


Fig. 5.

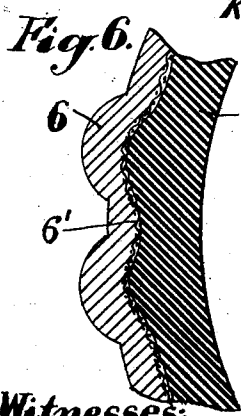


Fig. 6.

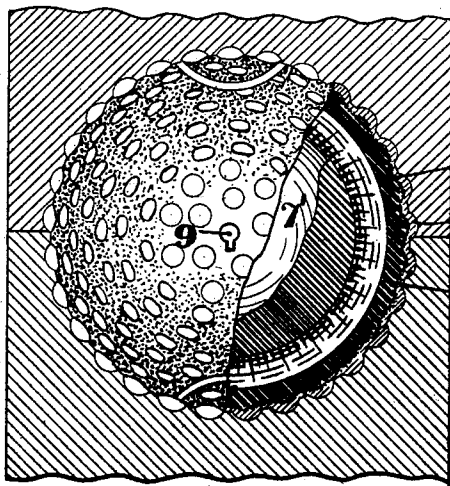


Fig. 7.

Witnesses:
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UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE KEMPSHALL MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

GOLF-BALL.

SPECIFICATION forming part of Letters Patent No. 701,766, dated June 3, 1902.

Application filed March 24, 1902. Serial No. 99,622. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, 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; and its object is to improve the structure and increase the durability of the ball.

In the drawings forming part of this specification, Figure 1 illustrates an unexpanded soft-rubber shell. Fig. 2 shows a layer of gutta-percha applied to said shell. Fig. 3 shows a fabric-lined layer of celluloid applied to the Fig. 2 device. Figs. 4 and 5 illustrate later stages in the production of the ball. Fig. 6 is an enlarged sectional fragment illustrating the construction of the ball. Fig. 7 is an enlarged cross-section of the ball-mold, showing a ball completed therein, but partly broken away.

In the several views similar parts are indicated by similar characters of reference.

In forming a core for the ball I employ a shell 1, of soft rubber, having a perforation 2 and a vent 2'. 3 designates the outer surface, and 4 the inner surface or cavity, of said shell. Upon said shell I apply a layer or shell 5, of gutta-percha or analogous material, and upon the latter I apply a fabric-lined layer or shell 6, preferably of celluloid or its equivalent. The layer 5 may be applied in a plastic condition and allowed to harden to an extent to be handled with safety. Then the fabric layer 6' may be applied, and finally the shell 6 put on in a plastic condition and allowed to harden. The several layers may, however, be otherwise applied within the scope of my invention, and it is desirable that all of said layers should be loosely arranged. The ball thus assembled I inclose in a mold *a*, consisting of two parts *a'* and *a''*, having a pair of hemispherical depressions *b'*, which together form a spherical cavity or chamber *b*. The mold is also provided above the spherical chamber with a cylindrical bore *c*, formed by opposing recesses *c'*, one in each of the halves of the mold, and in said bore works a piston *e*. In a hole *d*, which is formed

by recesses *d'* in the halves of the mold, is inserted a funnel *f*, having a flange *f'*. The half *a''* of the mold is provided with a transverse perforation *g*, screw-threaded at *h* to receive a threaded plug *j*. The mold-halves may be provided with dowels *k*.

When the ball is placed in the mold, the funnel enters through the perforation 2 and communicates with the cavity 4 of the rubber shell. In the bore *c* is placed a suitable quantity of gutta-percha 7', which is rendered fluent by heat. By the piston *e* said gutta-percha is forced into the interior of the ball, as at Fig. 4, the displaced air escaping through the vents 2' and *g*, whereupon the plug *j* may be inserted, as at Fig. 5, and the piston forced farther down to cause the gutta-percha to expand the rubber and its several enveloping layers 5, 6, and 6' to the limits of the mold or chamber. A vent 8 may be provided for the escapement of air from the chamber. The rubber shell is materially increased in diameter and put into a state of tension, while the gutta-percha and celluloid shells being rendered plastic by the heat are caused to conform to the shape of the chamber, which preferably is provided with pits illustrated, so as to form brambles or otherwise emboss the shell. The pressure is maintained upon the pistons *e* until the entire ball cools and hardens. The perforations 22' may be filled by a plug 9.

Variations may be resorted to within the scope of my present improvements—as, for instance, the fabric lining 6' between the outer and inner shell layers may be omitted, or other material may be substituted therefor.

Having described my invention, I claim—

1. A playing-ball comprising a shell of gutta-percha, fabric and celluloid, said shell being distended by a mobile mass injected thereinto.

2. In a playing-ball, a spherical shell consisting at least partially of gutta-percha and celluloid and distended by plastic material injected thereinto.

3. In a playing-ball, a shell formed of gutta-percha, celluloid, and an intervening fabric layer; said shell being distended by a core of gutta-percha injected thereinto.

4. In a playing-ball, a shell having an in-

ner layer of gutta-percha and an outer layer of celluloid, and distended by a core of gutta-percha injected therinto.

5 5. In a playing-ball, a shell formed of a plurality of layers of different kinds of plastic material and distended by a core of plastic material injected therinto.

6. In a playing-ball, an embossed shell formed of gutta-percha and celluloid and distended by a gutta-percha core injected therinto; and a plug filling the injection-hole in the shell.

7. A playing-ball comprising a shell of seamless or continuous layers of gutta-percha and celluloid, said shell being distended by a core of plastic material injected therinto; and the outer of said layers being embossed.

8. In a playing-ball, a shell distended by a mass of mobile material injected therinto; said shell comprising a seamless layer of gutta-percha inclosed by a seamless layer of fabric-lined celluloid.

9. A playing-ball comprising a shell of gutta-percha, fabric and celluloid, said shell being distended by a mobile mass injected therinto; and a layer of soft rubber intervening between said shell and said injected material.

10. In a playing-ball, a spherical shell consisting at least partially of gutta-percha and celluloid and distended by plastic material injected therinto; and a layer of tensioned

soft rubber intervening between said shell and said injected material.

11. In a playing-ball, a shell formed of gutta-percha, celluloid, and an intervening fabric layer; said shell being distended by a core of gutta-percha injected therinto; and a layer of soft rubber intervening between said shell and said injected material.

12. In a playing-ball, a shell having an inner layer of gutta-percha and an outer layer of celluloid, and distended by a core of gutta-percha injected therinto; and a layer of tensioned soft rubber intervening between said shell and said injected material.

13. In a playing-ball, a shell formed of a plurality of layers of different kinds of plastic material and distended by a core of plastic material injected therinto; and a layer of soft rubber intervening between said shell and said injected material.

14. In a playing-ball, a shell distended by a mass of mobile material injected therinto; said shell comprising a seamless layer of gutta-percha inclosed by a seamless layer of fabric-lined celluloid; and a layer of tensioned soft rubber intervening between said shell and said injected material.

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Witnesses:

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