

No. 727,200.

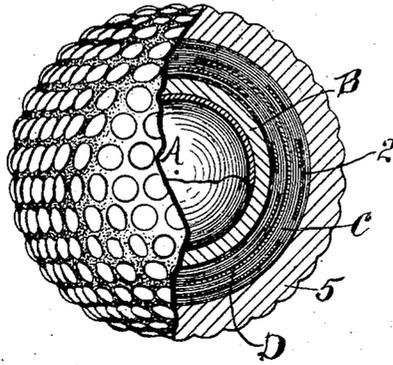
PATENTED MAY 5, 1903.

F. H. RICHARDS.  
PLAYING BALL.

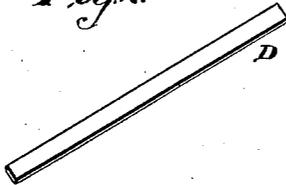
APPLICATION FILED OCT. 1, 1902.

NO MODEL.

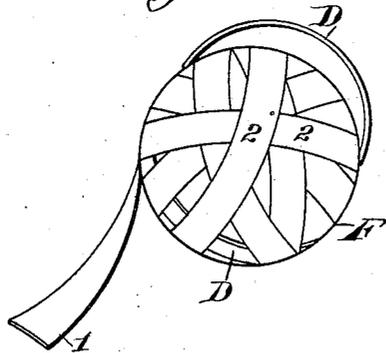
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## PLAYING-BALL.

SPECIFICATION forming part of Letters Patent No. 727,200, dated May 5, 1903.

Application filed October 1, 1902. Serial No. 125,523. (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 Playing-Balls, of which the following is a specification.

This invention, relating to playing-balls, and especially to those adapted for the purposes of golf, has for its object to provide a structure whereby increased efficiency is obtained at a reduced cost of manufacture.

In the drawings forming part of this specification, Figure 1 illustrates a ball partially broken away to show its components. Fig. 2 shows a strip of stock from which a spring is shaped or bowed, and Fig. 3 illustrates the method of building up the interior of the ball.

In the various figures like parts are designated by similar characters of reference.

The interior of the ball, as shown, preferably comprises a hard center piece A, which may be formed either of a solid body of plastic or fibrous material or it may comprise a metal or steel shell. This central body A is inclosed in a shell of suitable material B—such, for instance, as celluloid. This part of the ball may be formed, if desired, in the manner illustrated in the patent granted to me October 14, 1902, No. 711,228. Upon the structure thus formed I build up a layer C of high resilience, preferably, as shown, by winding on the center piece A strips I, Fig. 3, of either sulfur-cured rubber or acid-cured dental dam, the latter being preferred principally because it is acid-cured and practically free from foreign mixture, which would impair its elasticity, and also because it can be drawn taut without liability to rupture and is not liable to become cut. I preferably employ this material from one-half to three-fourths of an inch in width and from two one-hundredths to three one-hundredths of an inch in thickness, so that when tightly tensioned upon the ball the width is reduced to from one-fourth to one-half of an inch, as at

2, Fig. 3, and its thinness in due proportion. A further advantage of the dental dam is its lightness, whereby the weight of other parts of the ball may be to some extent compensated. Simultaneously with winding the rubber strips I insert in miscellaneous directions short lengths of tempered-steel wire, which are preferably flat or oblong in cross-section, as illustrated, and which are bent or curved to form springs D, and these are placed flatwise upon the ball during the winding operation. These springs D are formed into various-sized hemispherically-curved members and are of such sizes as to permit them to be sprung onto the spherical structure F at each winding, (see Fig. 3,) thereby making a tension in the wire, whereby each member tends constantly to recover its normal condition, so that every member is in a state of high initial tension. Moreover, since the rubber is wound upon the ball under great tension it holds the inclosed central portion of the ball under high compression. The structure hence comprises a sphere which is bound tightly within windings of highly-tensioned sheet-rubber holding under tension a plurality of individual springs, said springs being highly tensioned by the bending, so that a ball of phenomenal energy is produced. The relative arrangement shown and described is not essential in all cases, so long as windings of rubber alternate with the insertion of springs, as variations in windings of wire and rubber may be resorted to. It will be seen that the wire springs are of different diameters and inserted in different directions and also that each spring is bound tightly by the highly-tensioned rubber, whereby the spring action is considerably modified, the same being rendered far more resisting than would be the case if the spring were not restrained by the rubber. The effect of overwinding a spring in this manner is to render it extremely stiff, so that a light blow from a club upon a ball fails to flex the wire to such an extent as to render the ball

unduly active. The outer layer of windings of rubber confining a series of distorted springs holds all within a powerful grip, so that the tendency upon the part of all of the members is to preserve a spherical form. When the ball is given a hard blow with a club, the springs directly affected by the club are flexed, while the ball as a whole is changed from its spherical form, this change being instantly resisted by the springy spherical core F, which is confined under great tension by the windings of rubber and said springs, so that the ball has phenomenal flying power. It will also be seen that each spring is packed or embedded within the rubber, so as to form a perfectly-acting resilient member which can withstand considerable deformation under a blow and recover its form completely and instantly. Upon the filling thus formed I provide a shell 5, of wear-resisting material, preferably gutta-percha, and preferably holding said filling under a high degree of compression. Since the springs and rubber are very effective in maintaining the spherical form of the filling, the shell, although in a tense condition thereon, is not subjected to undue additional strain by reason of the change of the filling from its normal spherical form under a blow, so that liability of the shell to burst under a heavy blow is minimized. It will also be understood that the layer, which is formed of springs and windings of rubber and which is designated as C, furnishes a peculiar local resiliency under the action of a blow and makes a very effective distribution of the force of the blow throughout a large portion of the ball.

Having thus described my invention, I claim—

1. In a playing-ball, the combination with a core, of windings thereon of tensioned rubber alternating with bowed individual members of resilient material, and a cover upon said windings.

2. A playing-ball comprising a sphere and a cover thereon; said sphere consisting at least partially of windings of tensioned rubber mixed promiscuously with bowed individual members of resilient material.

3. A playing-ball comprising a sphere of hard material, windings thereon of tensioned rubber mixed with wire springs, and a cover.

4. A playing-ball comprising a sphere and a cover; said sphere comprising layers of soft rubber and wire springs inserted therebetween.

5. A playing-ball comprising a metallic sphere, windings thereon of tensioned rubber, bowed individual springs promiscuously inserted therebetween, and a cover.

6. A playing-ball comprising a core, windings thereon of tensioned rubber, steel springs held in confinement thereby, and a cover.

7. A playing-ball comprising a sphere and

a cover thereon, said sphere consisting at least partially of windings of rubber in which are inserted a number of bowed individual springs.

8. A playing-ball comprising a sphere of steel, windings thereon of tensioned rubber mixed with tempered springs, and a hard cover formed of plastic material.

9. A playing-ball comprising a hollow sphere of steel, a plastic shell thereon, a soft layer inclosing said shell and throughout which are promiscuously embedded a plurality of tempered springs in a tense condition, and a cover formed of plastic material and holding said sphere under compression.

10. A playing-ball at least a portion whereof consists of a strip of tensioned rubber wound in miscellaneous directions, and within which windings are a series of bowed individual springs.

11. A playing-ball at least a portion whereof consists of a plurality of tempered-steel springs held in a tense condition by windings of tensioned approximately pure rubber strips, said springs and said strips being applied in miscellaneous directions.

12. A playing-ball at least a portion whereof consists of tempered-steel springs held in a tense condition by windings of tensioned approximately pure rubber strips; said wire and said strips being applied in miscellaneous directions; and a hard sphere within said windings.

13. A playing-ball at least a portion whereof consists of tempered-steel springs held in a tense condition by windings of tensioned approximately pure rubber strips; said wire and said strips being applied in miscellaneous directions; and a steel shell within said windings.

14. A playing-ball at least a portion whereof consists of tempered-steel springs held in a tense condition by windings of tensioned approximately pure rubber strips; said wire and said strips being applied in miscellaneous directions; a metal sphere within said windings; and a shell of gutta-percha holding said windings under compression.

15. A playing-ball at least a portion whereof consists of a spherical body of resilient material, a layer of celluloid thereon and a soft elastic layer, throughout which are interspersed springs of tempered wire.

16. A playing-ball comprising a center piece, a layer thereon, and a thick spherical body of soft rubber, throughout which are interspersed tempered springs.

17. A playing-ball comprising a center piece, a celluloid shell thereon, and a thick spherical body of tense soft rubber, throughout which are interspersed tempered-steel springs in a tense condition; said body being held under compression by a gutta-percha cover.

18. A playing-ball whereof at least a por-

tion consists of flat tempered springs inter-  
spersed with windings of tensioned-rubber  
strips.

5 19. A playing-ball having a hard shell and  
a core, and a layer between said shell and  
core; said layer consisting of a plurality of  
tempered springs mingling with rubber.

20. A playing-ball having a core, a layer

of plastic material thereon, a hard shell and  
a soft springy layer interspersed with bowed 10  
individual springs.

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