

No. 711,177.

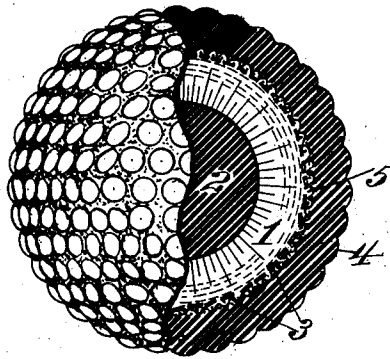
Patented Oct. 14, 1902.

F. H. RICHARDS.  
PLAYING BALL.

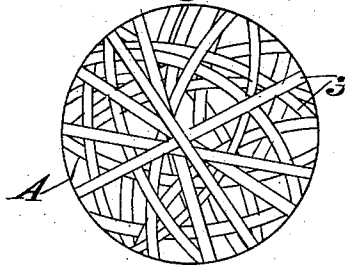
(Application filed June 12, 1902.)

(No Model.)

*Fig. 1.*



*Fig. 2.*



*Witnesses:*

*And E. Maynard.*  
*B. B. Stickney*

*Inventor:*

*F. H. Richards.*

# UNITED STATES PATENT OFFICE.

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

## PLAYING-BALL.

SPECIFICATION forming part of Letters Patent No. 711,177, dated October 14, 1902.

Application filed June 12, 1902. Serial No. 111,263. (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 relates to playing-balls, especially those used in the game of golf; and its object is to produce at low cost a ball having exceptional flying power under a hard blow, but inactive under a light blow.

In the drawings forming part of this specification, Figure 1 is a view of a ball made in accordance with my present improvements and shown partly in section, and Fig. 2 is a view of my improved filling.

The interior of the ball preferably comprises a sphere 1, which in this instance forms the body or main portion of the entire ball, although it may be made of smaller proportion, if desired. This sphere preferably consists of soft rubber under tension, preferably molded solid rubber, the tension being produced by the injection thereinto of a center piece 2 of gutta-percha or other material, substantially in the manner set forth in the patent granted to me March 25, 1902, No. 696,353. If desired, an untensioned molded rubber sphere may be used in place of the tensioned sphere 1. Upon said sphere I flex or bend continuously in miscellaneous directions one or more lengths of a spring-tempered wire 3, thereby forming a tense metallic casing or lattice-work A, Fig. 2, which thus consists of a series of irregularly-arranged tense bands or hoops. The wire is preferably flat or oblong in cross-section and wound flatwise upon the rubber sphere 1, and the number of the windings may be varied to suit the ball to different games or to give it different qualities. The spring-wire before winding may be substantially straight and flexed or constrained at each winding, thereby making a tension in the wire, so that each hoop or band tends constantly to recover its normal straight condition, and hence every portion of the casing A is in a state of high initial tension, which is a feature of great importance. Moreover, since the wire is wound upon the rubber sphere

1 under great longitudinal tension it holds said sphere under high compression. The structure hence comprises a sphere of soft rubber, which is bound tightly within windings of longitudinally unyielding wire, said wire itself being highly tensioned by the bending and shows enormous activity when given a heavy blow. Upon said filling A, I form a shell 4 of gutta-percha or other plastic material, and preferably provide an intermediate lining 5 of fabric to prevent cutting of the gutta-percha by the wire and also to deaden the ball somewhat, so that it may not be too active under a light blow, while at the same time calling into action more of the wire hoops or springs 3 than would otherwise be the case, and hence improving the flying quality of the ball under a heavy blow. It will be understood also that the metallic casing A is so rigid as not to be sprung by a light blow, such as given in putting.

It will be perceived that since the wire casing A holds the rubber sphere 1 in a powerful grip the tendency upon the part of both the rubber sphere and the casing is to preserve a spherical form, and therefore great resistance is offered to any distortive tendency, or, in other words, a blow in order to distort the wound sphere must overcome the powerful tendency thereof to preserve its spherical form, and must do this against the great opposition offered by the highly-tensioned springs which compose the casing. The reaction of the device is instantaneous and powerful, and hence an enormous amount of power may be imparted to the ball, thus prolonging its flight.

Wire having other cross-sections and of any suitable spring-tempered metal may be used, and other variations may be resorted to within the scope of my improvements.

Having described my invention, I claim—

1. In a playing-ball, the combination with a sphere of yielding material, of a series of spring-tempered metallic hoops binding upon said sphere and forming a lattice-work casing thereon.

2. In a playing-ball, the combination with a sphere of soft rubber, of spring-tempered wire wound in miscellaneous directions in a tense condition and forming a casing thereon;

said sphere being held under compression by said casing.

3. In a playing-ball, the combination with a cover, of a series of spring-tempered metal springs confined within said cover and in a tense condition.

4. In a playing-ball, the combination with a sphere of yielding material, of a series of spring-tempered metal springs in a tense condition thereon, and a cover inclosing said springs.

5. In a playing-ball, the combination with a sphere of yielding material, of a series of spring-tempered metal springs in a tense condition thereon, and a shell of plastic material inclosing said springs.

6. In a playing-ball, the combination with a sphere of yielding material, of a series of spring-tempered metal springs in a tense condition thereon, and a shell of plastic material holding said springs under compression.

7. In a playing-ball, the combination with a sphere of soft rubber, of spring-tempered wire wound tightly in miscellaneous directions and forming a casing thereon; said sphere being held under compression by said casing; a cover of plastic material upon said casing, and an intervening layer of flexible material.

8. In a playing-ball, the combination with a sphere of soft rubber, of spring-tempered wire wound in miscellaneous directions thereon; a cover of plastic material upon said windings; and an intervening layer of fabric.

9. In a playing-ball, the combination with a sphere of yielding material, of a series of spring-tempered metal springs in a tense condition thereon, and a shell of gutta-percha holding said springs and sphere under compression.

10. In a playing-ball, the combination with a sphere of yielding material, of a series of spring-tempered metallic hoops binding upon said sphere and forming a lattice-work casing thereon; said hoops being oblong in cross-section and placed flatwise upon said sphere.

11. In a playing-ball, the combination with

a sphere of soft rubber of a spring-tempered flat wire spring wound flatwise and under tension in miscellaneous directions and forming a casing thereon, and a yielding cover upon said casing.

12. In a playing-ball, the combination with a cover, of a series of spring-tempered flat circular metal springs confined within said cover and in a tense condition.

13. In a playing-ball, the combination with a sphere of yielding material, of a series of spring-tempered metal springs in a tense condition thereon, and a fabric-lined shell of plastic material holding said springs and sphere under compression.

14. In a playing-ball, the combination with a sphere of yielding material and a hard center piece therein, of a series of spring-tempered metallic hoops binding upon said sphere and forming a lattice-work casing thereon.

15. In a playing-ball, the combination with a sphere of tensioned soft rubber having a hard center piece, of spring-tempered wire wound in a tense condition in miscellaneous directions and forming a casing thereon; and a cover upon said windings.

16. In a playing-ball, the combination with a cover, of a series of circular spring-tempered metal springs confined within said cover and in a tense condition and forming a lattice-work sphere.

17. In a playing-ball, the combination with a shell of yielding material, of a series of spring-tempered metal springs in a tense condition and supporting said shell.

18. In a playing-ball, the combination with a tensioned sphere of soft rubber having a hard center piece, of a spring-tempered flat wire spring wound tightly in miscellaneous directions and forming a casing thereon; and a cover of gutta-percha and fabric upon said casing.

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Witnesses:

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