

No. 737,774.

PATENTED SEPT. 1, 1903.

F. H. RICHARDS.
PLAYING BALL.

APPLICATION FILED JAN. 15, 1903.

NO MODEL.

Fig. 1.

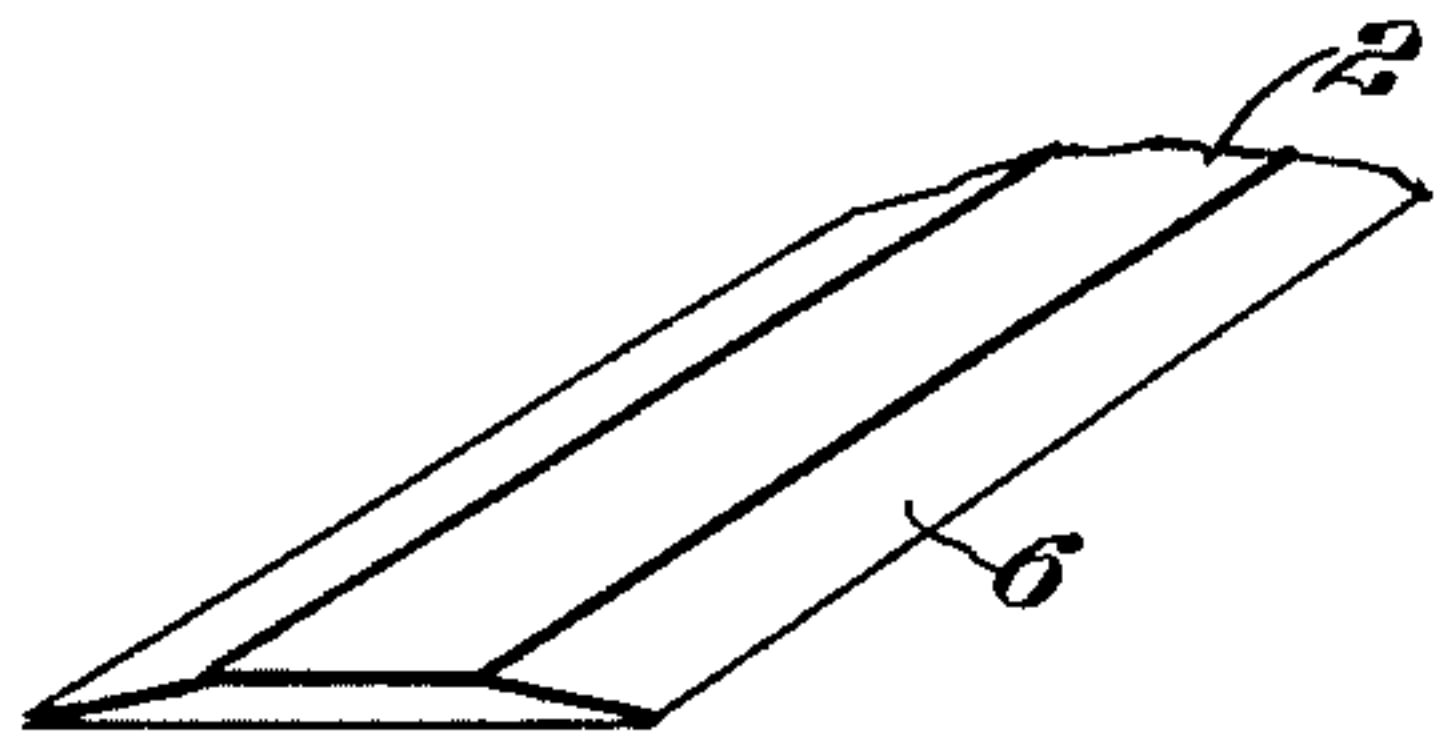
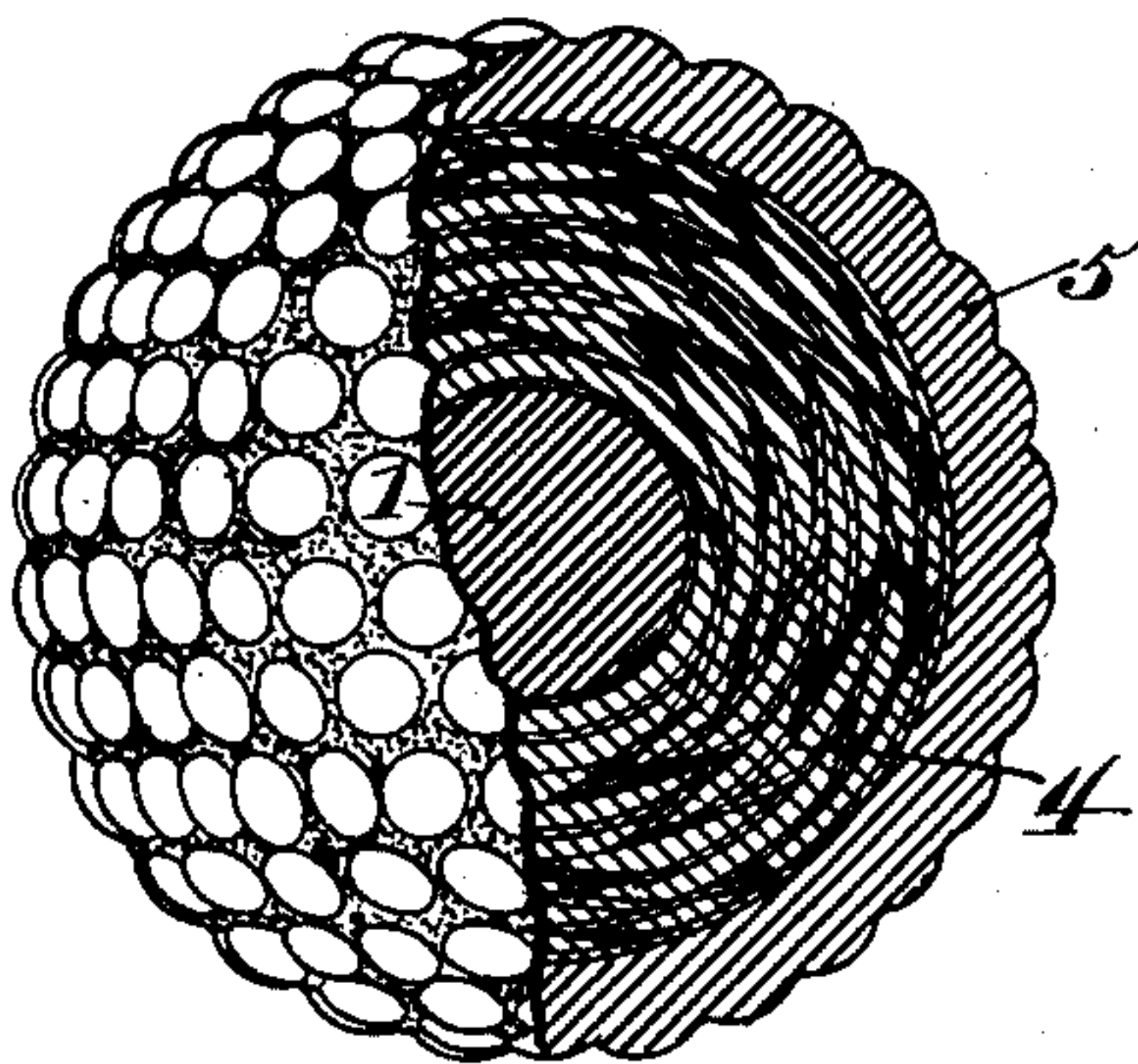


Fig. 2.

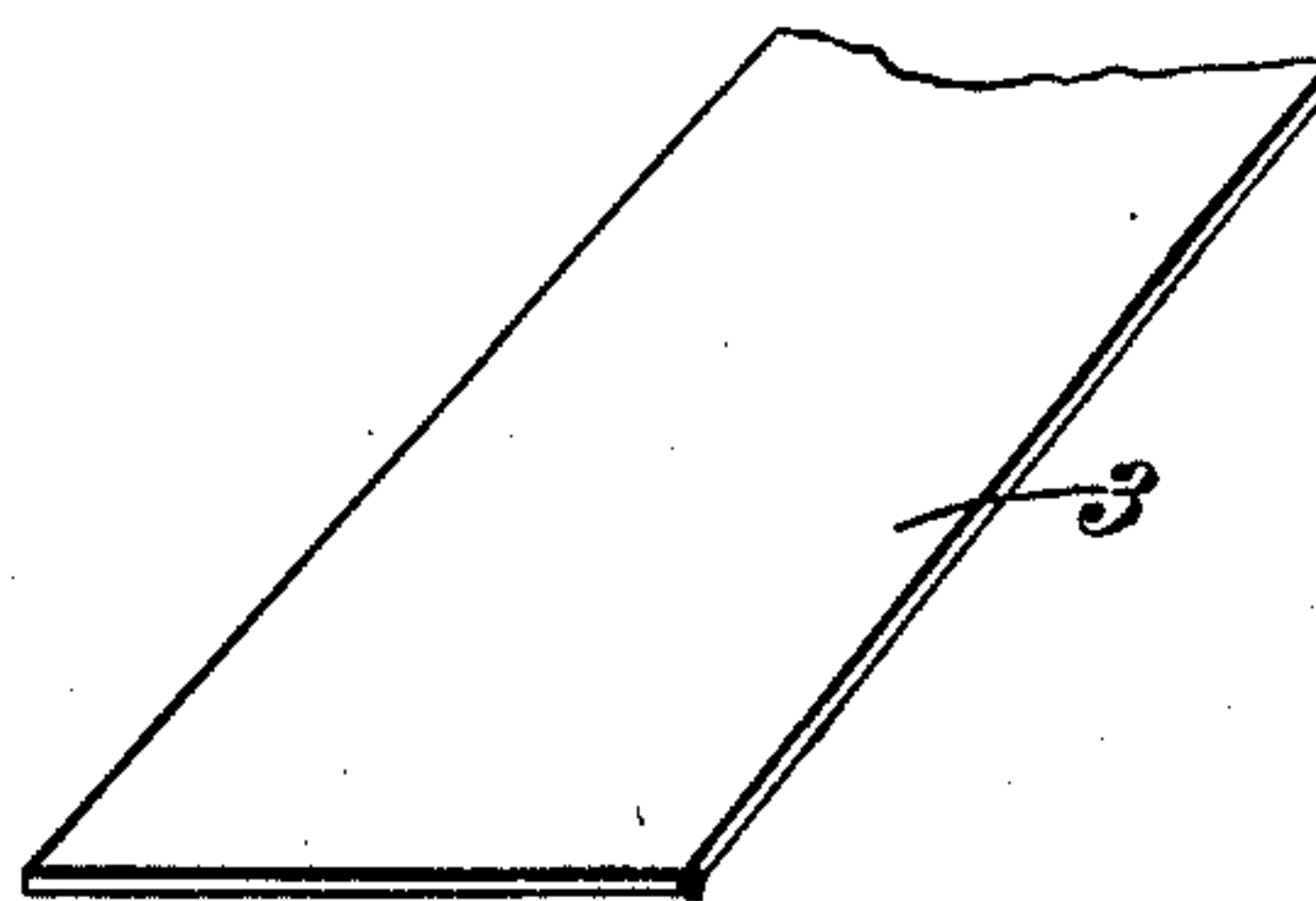


Fig. 3.

Witnesses:

Herbert J. Smith
F. W. Barnack,

Inventor:

F. H. Richards.

UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT.

PLAYING-BALL.

SPECIFICATION forming part of Letters Patent No. 737,774, dated September 1, 1903.

Application filed January 15, 1903. Serial No. 139,111. (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 has for its object to produce at a low cost a ball possessing phenomenal flying power.

In the accompanying drawings, Figure 1 illustrates a partial section of a ball embodying my improvements. Fig. 2 illustrates a perspective of one form of strip which may be used in building up the filling or center of the ball, and Fig. 3 is a similar view of another form of strip which may be wound simultaneously with the first-mentioned strip.

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

For the center piece of the ball I employ a small sphere 1, of hard material, which is preferably springy, upon which I wind two strips 2 and 3 simultaneously and in miscellaneous directions, one strip being of vulcanized or heat-cured rubber and the other of thin acid-cured rubber. These strips are wound layer over layer to form a filling 4, upon which is placed a shell 5, of hard springy plastic material, preferably gutta-percha, and preferably holding the filling under compression. One of the strips, as 2, Fig. 2, which may be formed either from the acid-cured or the heat-cured rubber, but preferably the latter, is beveled, chamfered, or thinned down at its side edges, as at 6, while the strip 3, Fig. 3, is wider and thinner than said strip 2. In building up the filling 4, forming the principal part of the body of the ball, I wind these strips 2 and 3, respectively, simultaneously and in miscellaneous directions, preferably stretching one strip to a greater degree than the other. In the present instance I prefer to more highly tension or stretch the heat-cured strip 2, having the beveled or thinned edges, which causes the body of the said strip to become materially thinned, so that the windings pack close, which owing to the tapering or thinness of the edges thereof each winding is fitted down tight and close upon the previous one, also upon the intermediate layer 3, which in the present instance

may or may not be wound under such great tension, but which, being much thinner than said strip 2, has the natural tendency to pack close when wound. Hence these two strips, packing very close layer upon layer, avoid any crevices whatever, thus making a solid ball or sphere, all parts of which are under a high degree of tension. (See Fig. 1.) The acid-cured rubber strip has the advantage of being extremely elastic and packs very close, and because of its thinness a great number of windings can be compacted within the allotted space, and since each winding is independently tensioned a large amount of force or energy is stored up in the ball. It will also be noted that the heat-cured strip is slightly less elastic than the acid-cured one. Hence by winding the two in conjunction, winding one under greater tension than the other, the resilience created by the high-tensioned strip of a highly-elastic nature is somewhat modified by the less elastic strip. It will also be noted that by using approximately pure acid-cured rubber in forming the parts of the ball the latter is rendered buoyant.

The gutta-percha shell 5 may be formed from hemispherical segments, which may be compressed upon the filling 4 under heat and pressure, and thus welded together, whereby to hold the center of the ball under compression.

By using the term "acid-cured" I mean to distinguish it from the vulcanizing process, which consists in mixing sulfur mechanically with rubber, then subjecting the mixture to heat, said acid cure involving the surface treatment or immersion of raw sheet-rubber into a suitable bath—as for instance, a bath consisting of dichlorid of sulfur and carbon disulfid.

Having thus described my invention, I claim—

1. In a playing-ball, a solid sphere consisting of mixed windings of distinct rubber strips, one of said strips having chamfered edges, and another being a thinner plain strip.
2. In a playing-ball, a solid sphere consisting of mingled windings of distinct rubber strips, one strip whereof is thinned along its edges, the other strip being thin and plain throughout.
3. In a playing-ball, a solid sphere consist-

ing of mingled windings of distinct rubber strips, one of said strips having thinned edges, another being a thinner plain strip, and one strip being wound under a high degree of tension.

4. In a playing-ball, a solid sphere consisting of mingled windings of distinct rubber strips, one strip having chamfered edges, the other strip being wider than said chamfered strip and one of said strips being wound under greater tension than the other.

5. In a playing-ball, a sphere consisting of mingled windings of distinct rubber strips, one strip having beveled edges and being thick, the other strip being thin and rectangular in cross-section, and the thin strip being wound under a less tension than the beveled strip.

6. In a playing-ball, a sphere consisting of windings of both acid-cured and heat-cured rubber strips, the latter being thinned along its edges.

7. In a playing-ball, a sphere consisting of windings of strips of acid-cured and heat-cured rubber; said acid-cured strip being wider than said heat-cured strip, and the latter being chamfered along its edges.

8. In a playing-ball, a sphere consisting of windings of strips of acid-cured and heat-cured rubber, said acid-cured strip being

wider than said heat-cured strip, said heat-cured strip being chamfered along its edges, and one of said strips being wound under greater tension than the other.

9. In a playing-ball, a sphere consisting of windings of strips of acid-cured and heat-cured rubber, said acid-cured strip being wider than said vulcanized strip, said heat-cured strip being chamfered along its edges, said heat-cured strip being wound under greater tension than the other.

10. A playing-ball comprising a center piece, windings thereon of heat-cured and acid-cured rubber strips, one of said strips being beveled and the other being thinner and wider than said beveled strip, and a plastic shell.

11. A playing-ball comprising a hard, springy center piece, a stiff springy shell, and intermediate windings of acid-cured and heat-cured rubber, one of said windings being under greater tension than the other, and having a chamfered edge.

Signed at Nos. 9 to 15 Murray street, New York, N. Y., this 14th day of January, 1903.

FRANCIS H. RICHARDS.

Witnesses:

B. C. STICKNEY,

F. W. BARNACLO.