

No. 726,503.

PATENTED APR. 28, 1903.

G. BROWNING & C. E. BOUTWOOD.

GOLF BALL.

APPLICATION FILED MAY 21, 1902.

NO MODEL.

Fig. 1.

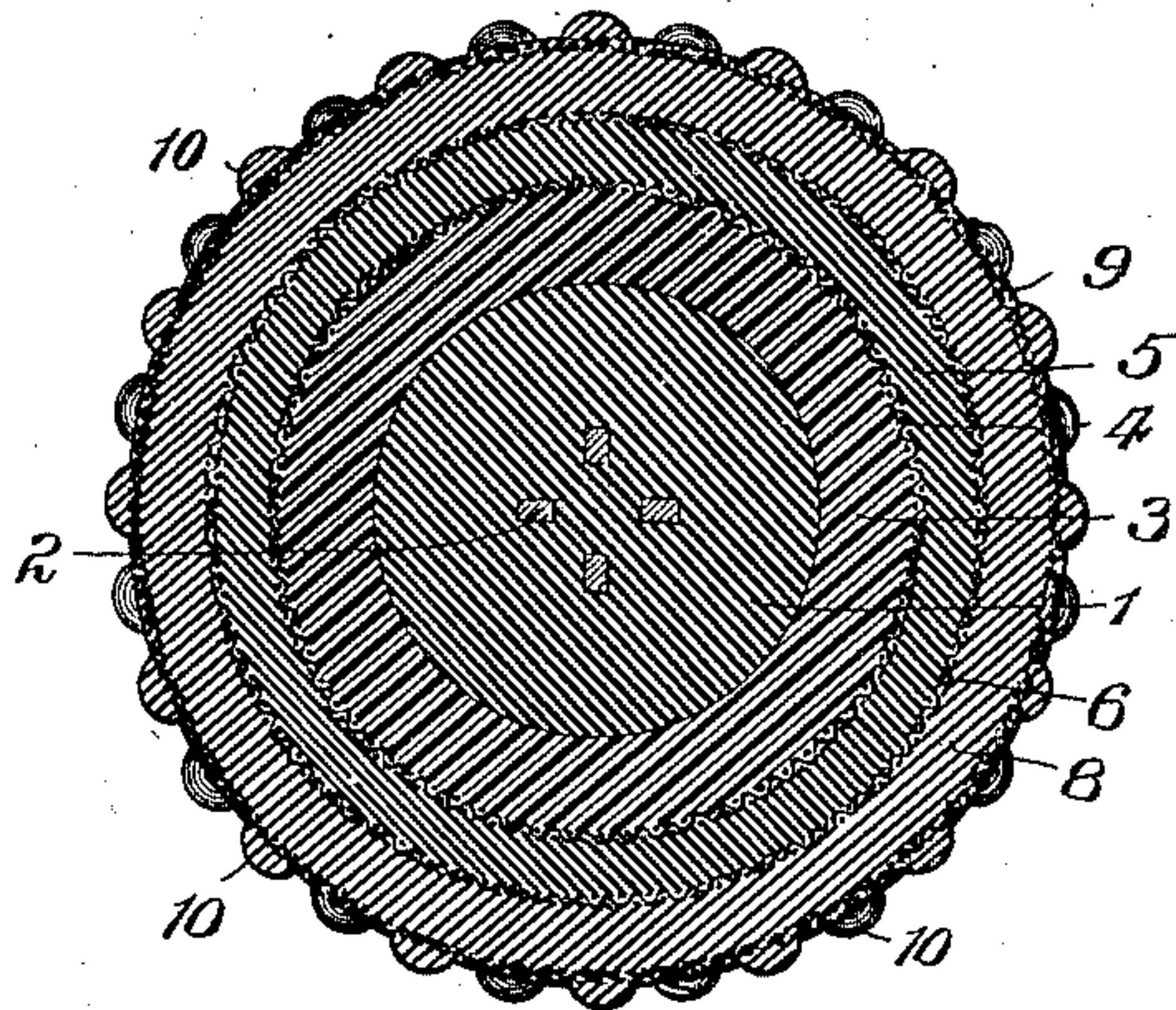


Fig. 2.

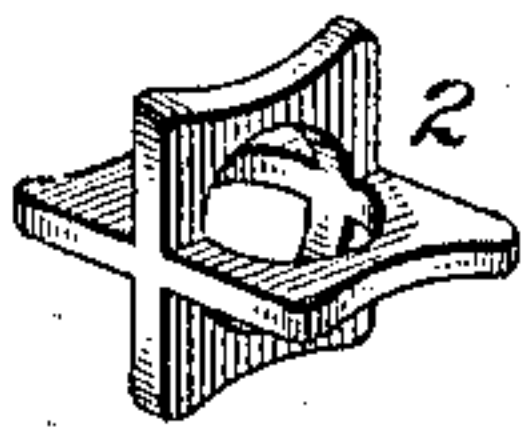


Fig. 3.

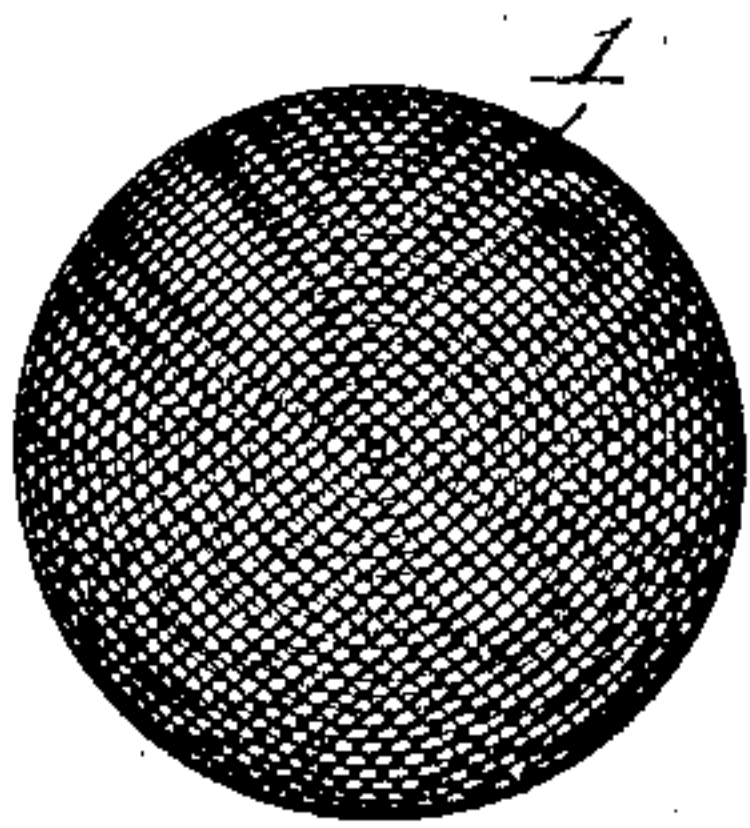


Fig. 4.

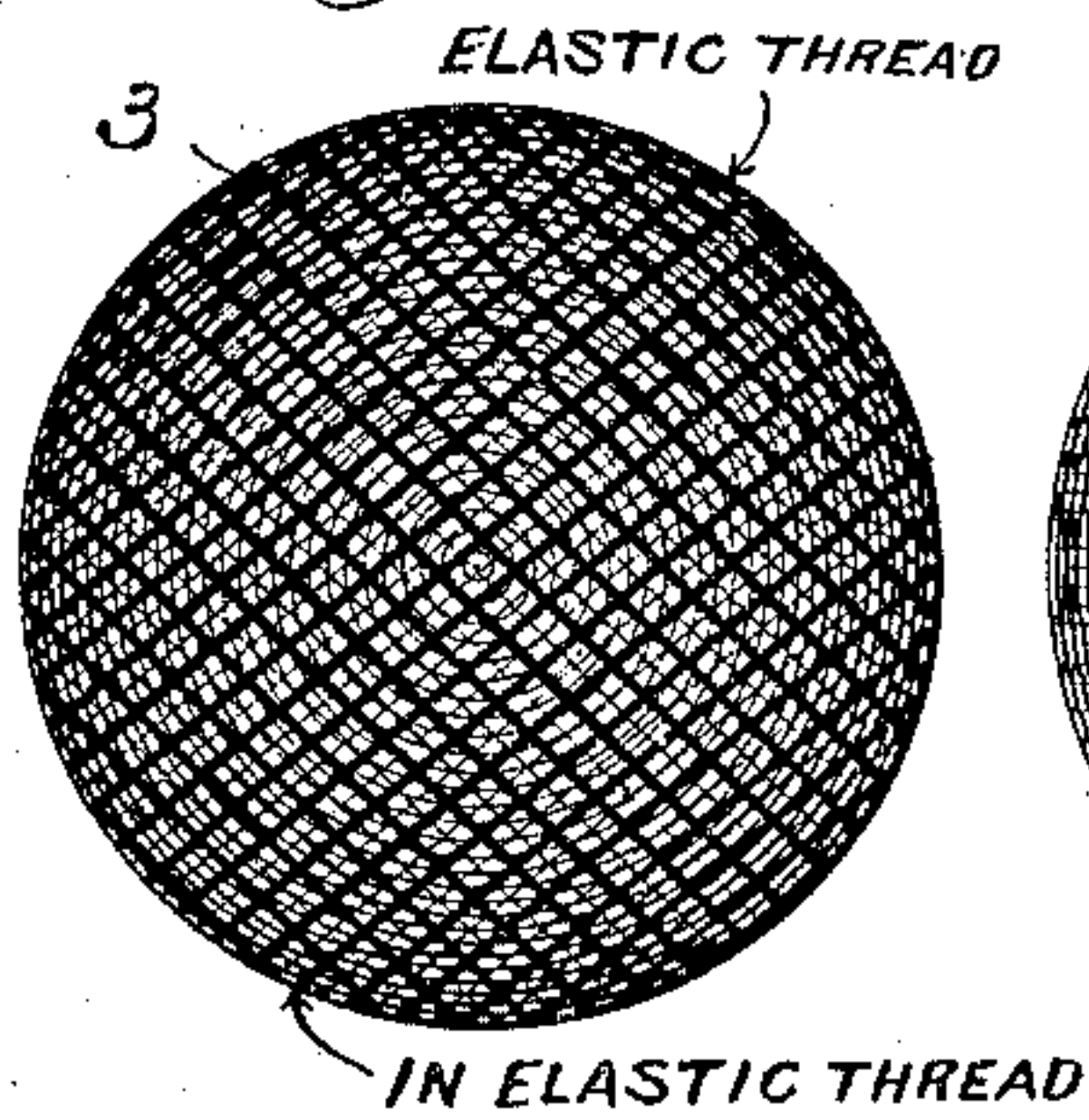


Fig. 5.

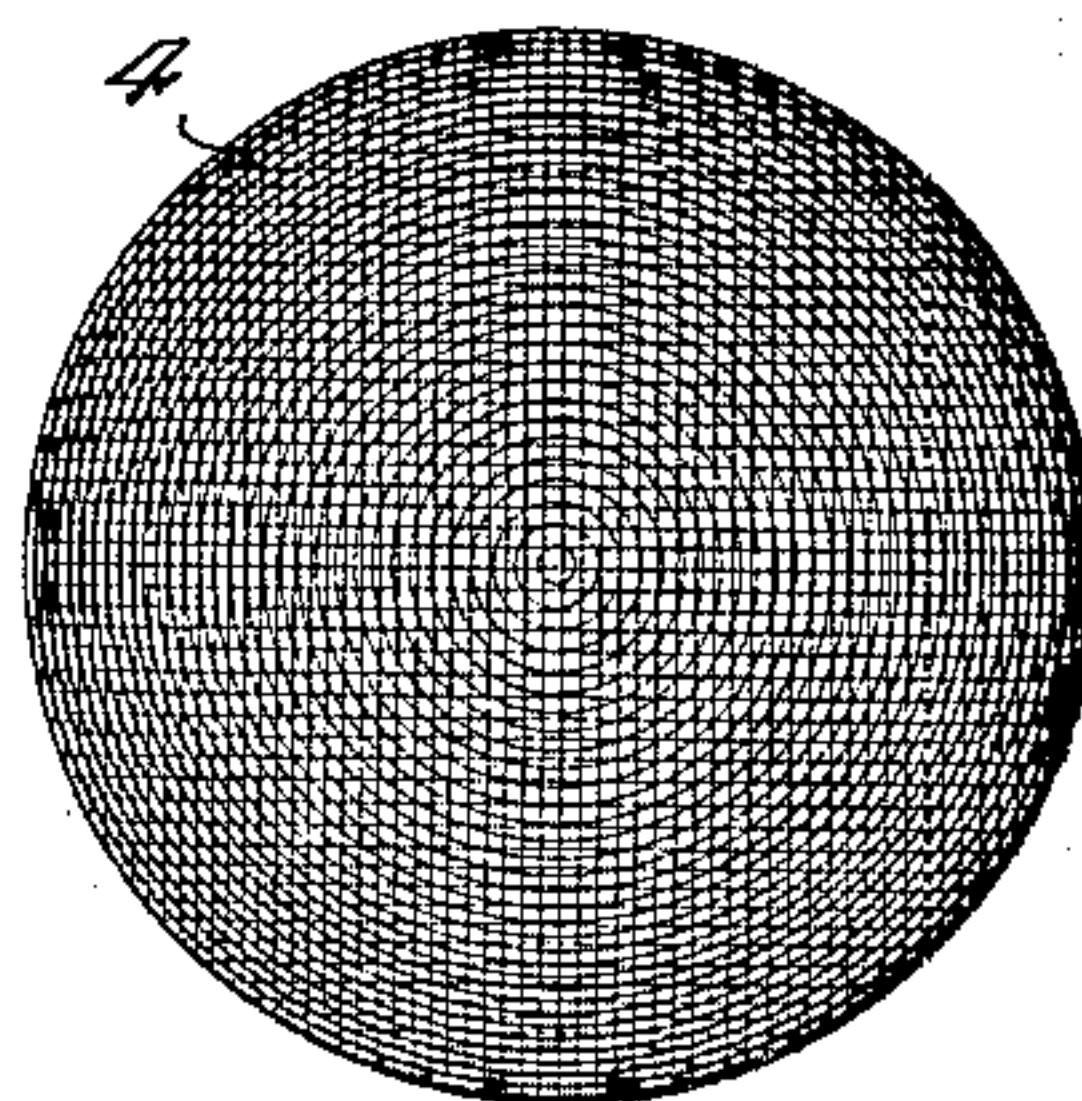


Fig. 6.

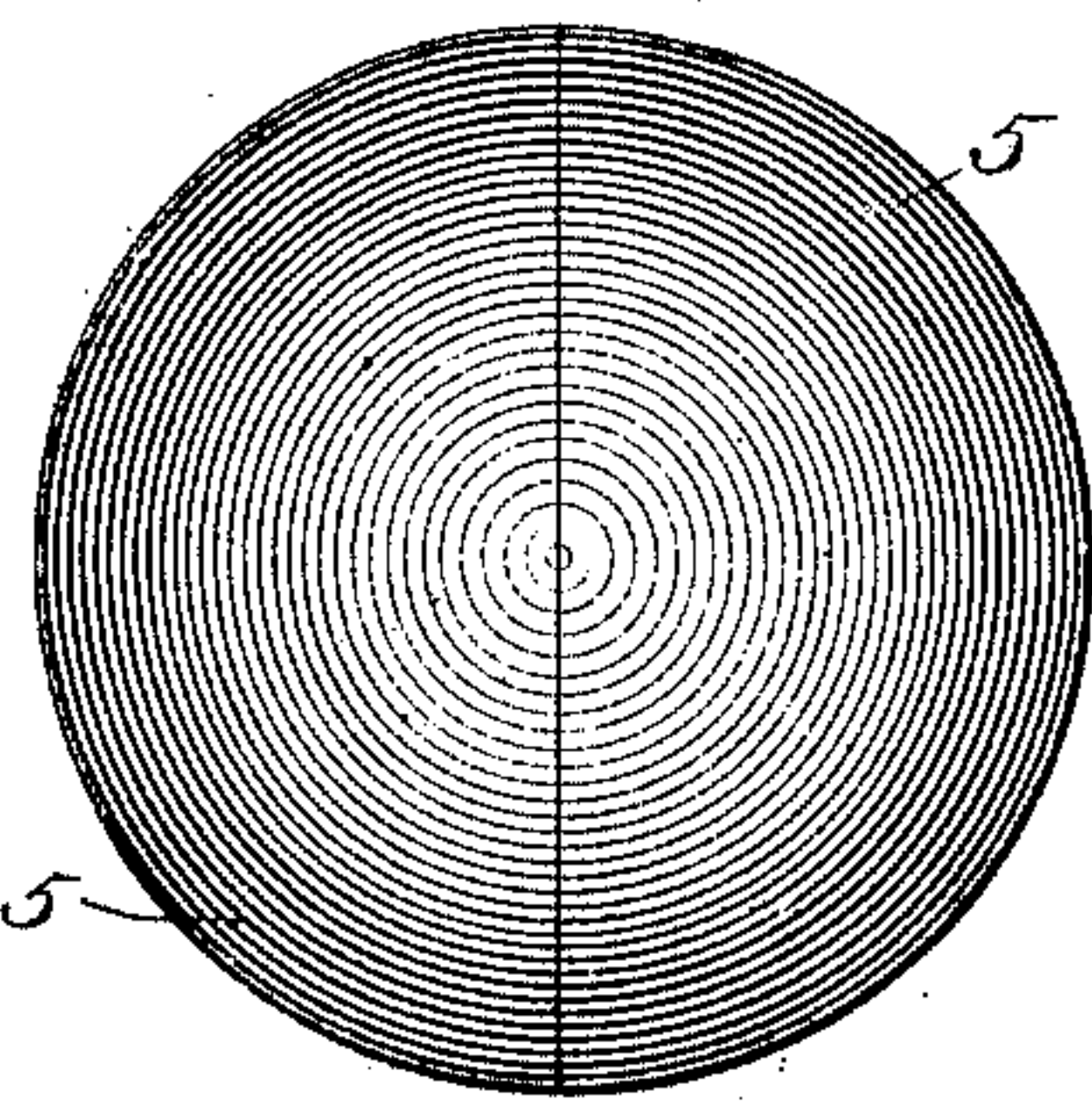


Fig. 7.

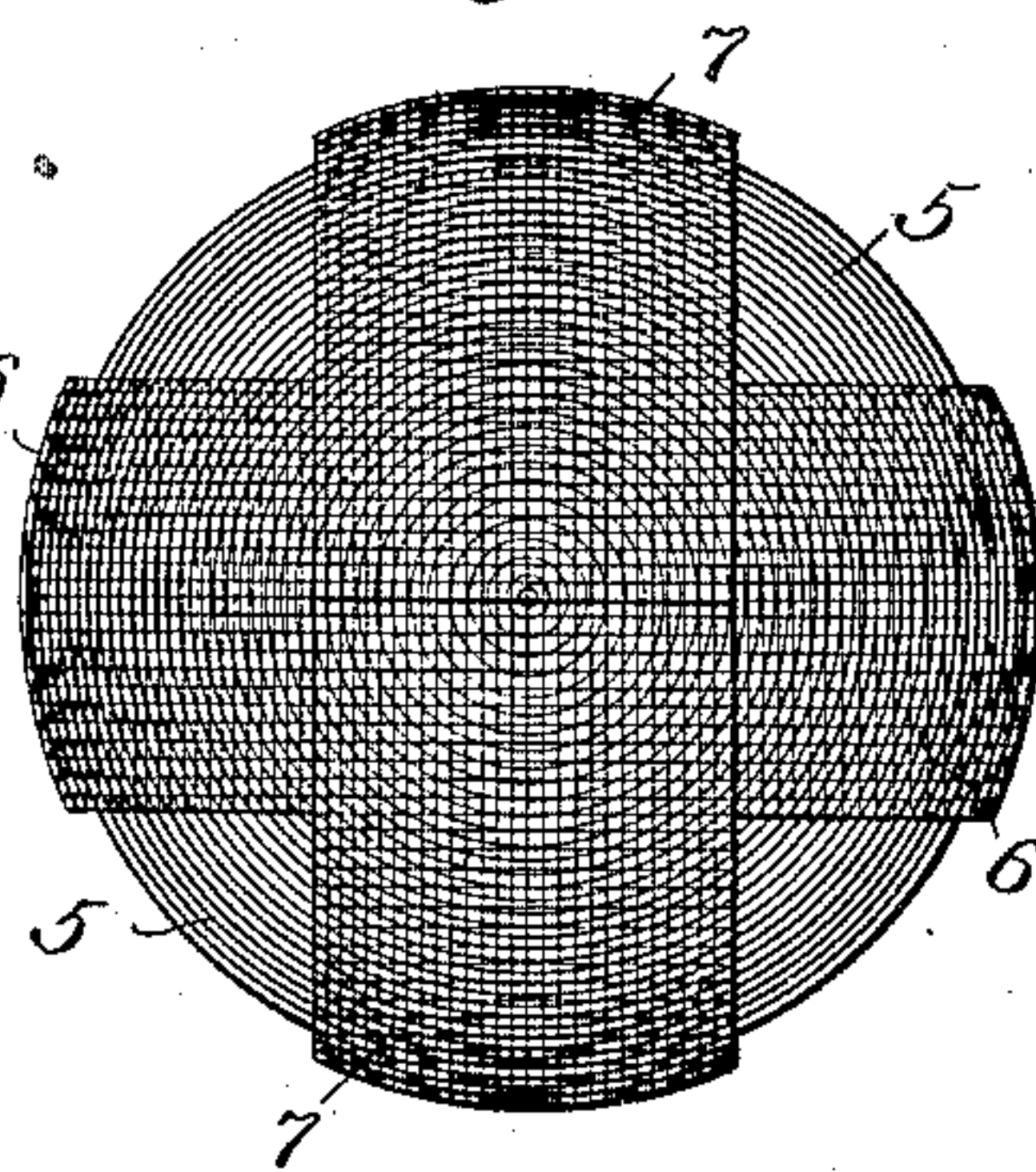
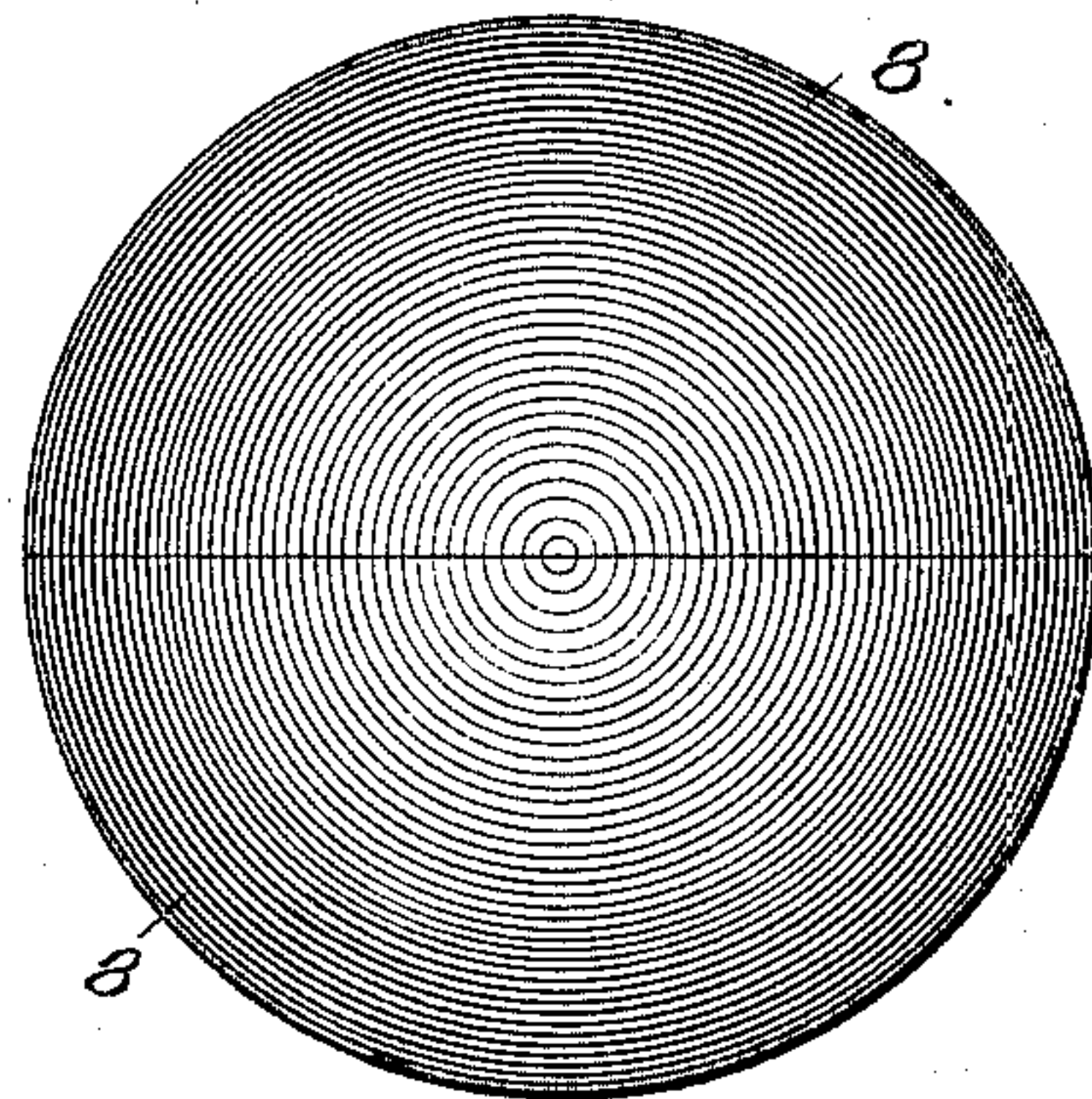


Fig. 8.



Attest:

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UNITED STATES PATENT OFFICE.

GEORGE BROWNING AND CHARLES EDWARD BOUTWOOD, OF HINSDALE,
ILLINOIS.

GOLF-BALL.

SPECIFICATION forming part of Letters Patent No. 726,503, dated April 28, 1903.

Application filed May 21, 1902. Serial No. 108,315. (No model.)

To all whom it may concern:

Be it known that we, GEORGE BROWNING, a subject of the King of Great Britain, and CHARLES EDWARD BOUTWOOD, a citizen of the United States, both residing at Hinsdale, in the county of Dupage and State of Illinois, (with post-office addresses at Hinsdale, Illinois,) have invented certain new and useful Improvements in Golf-Balls, of which the following is a specification.

The present invention relates to golf-balls of the composite type, and has for its primary object to provide a composite construction of golf-ball of a durable nature and in which are involved in a very perfect manner the features of elasticity under heavy impacts and inelasticity under the lighter impacts in the golf game.

A secondary object is to provide an efficient outer covering for the golf-ball affording greater durability to the outer surface of ball during the repeated blows or impacts to which it is exposed in continued use.

In the accompanying drawings, illustrative of the present invention, Figure 1 is a central section of a golf-ball embodying the present invention. Fig. 2 is a detached perspective view of centerless spider upon which the elastic core of the ball is wound or formed. Fig. 3 is an elevation of central elastic core as formed by winding india-rubber threads upon the centerless spider. Fig. 4 is an elevation of the partly-completed ball, illustrating the layer or winding of india-rubber and spun fiber threads which is applied to the exterior of the elastic core. Fig. 5 is a similar view illustrating the inclosing layer of fabric applied outside the layer or winding illustrated in Fig. 4. Fig. 6 is a similar view illustrating the sectional inner shell of gutta-percha which is fitted to the partially-formed ball shown in Fig. 5. Fig. 7 is a similar view illustrating binding-strips of fabric applied to the outer surface of the sectional inner shell illustrated in Fig. 6. Fig. 8 is a similar view illustrating the sectional outer shell of gutta-percha, which fits outside the inner shell and the binding-strips shown in Figs. 6 and 7 and completes the ball ready for the molding-press, in which the ball is finished by the application of heat and pressure.

Similar numerals of reference indicate like parts in the several views.

Referring to the drawings, 1 represents the elastic core of the present golf-ball formed by winding elastic india-rubber threads into a spherical body, the spheroid nature of which is conveniently effected and very efficiently maintained by the use of a central skeleton spider 2, of metal or other like rigid material. Such spider in the preferred form of the present invention is made without a central portion, so that the elastic winding forming the core will contact at the center of such core, and in consequence a stress tending to compress such core from any point of its periphery will be transmitted across the full diameter of the core and in such manner add materially to the elasticity of the golf-ball.

3 is a supplementary core arranged around the central core 1, above described, and which in the present invention is formed of a compound winding of elastic india-rubber threads and spun fiber threads wound together around the central core 1 to form such supplementary core 3, so as to afford a semi-elastic nature to the same which is of an intermediate degree between the elasticity of the central core 1 and that of the outer inclosing shell or shells of gutta-percha, hereinafter described.

In Fig. 4 of the drawings the aforesaid compound winding is represented by alternate heavy and light lines, the one representing the elastic thread winding and the other the inelastic or spun thread winding.

4 is a layer of woven fabric surrounding the supplementary core 3 and adapted to confine the same in shape and in addition is adapted to strengthen the seam of the next adjacent inclosing shell of gutta-percha.

5 represents a pair of semispherical shells, of gutta-percha or the like, applied outside the layer of woven fabric 4 to form an inclosing shell therefor, the fabric acting in this connection as a bond for the joint or seam between such semispherical shells and afford additional strength thereto.

6 and 7 are strips or layers of woven fabric surrounding the semispherical shells 5, the layer 6 of which lies over the seam of such shells to bond and strengthen the same, while the other layer 7 of such woven fabric is at

right angles to such first layer and is adapted to bond the seam between the two semispherical shells, which constitute the outer inclosing shell of gutta-percha hereinafter described.

5 8 represents a pair of semispherical shells, of gutta-percha or the like, applied outside the layers 6 and 7 of woven fabric to form the outer inclosing shell of the golf-ball, with their seam or joint in a plane at right angles
10 to the seam or joint of the inner semispherical sections 5 heretofore described, so that the layer of fabric 7 aforesaid will act as a bond for the joint or seam between such semispherical shells and afford additional
15 strength thereto.

9 is a layer of cloth inclosing the outer shell 8 just described and adapted to impart additional toughness to the surface thereof, and to this end such layer of cloth is em-
20 bedded in the surface of such gutta-percha shell 8 during the process of final manufacture of the ball, so that the gutta-percha composing such shell 8 will in manner herein- after set forth extend through such fabric,
25 and so that the projections or beads 10 on the outer surface of the ball will project outside said layer of fabric, as illustrated in Fig. 1.

The final process of manufacture above
30 mentioned consists in placing the ball formed in the manner described in an apparatus similar to that shown in our Patent No. 685,095, of October 22, 1901, and by means of heat and pressure imparting the desired
35 shape and configuration to the ball, such heat and pressure acting to join and bond the parts together, as before stated, in a very perfect and efficient manner. During such
40 application of heat and pressure the outer surface of the inclosing shell 8 is quite plastic, and by practical experience it has been found that the gutta-percha composing such
45 shell will permeate through and show upon the outer surface of the outer layer of fabric 9, and where recesses are formed in the mold to produce a bramble marking on the ball the plastic gutta-percha will penetrate
50 through the mesh of such fabric and assume the form of beads outside the same and within such cavities of the mold.

With the present invention the very resilient core enables the use of a thicker and more serviceable shell or outer covering of gutta-percha and is especially useful in causing the
55 ball to rebound at the end of its flight. In like manner the intermediate and composite or mixed windings of elastic and cotton or other like threads is adapted to impart greater degree of solidity to the golf-ball, so that the
60 ball will offer more resistance to a hard blow and carry farther before touching the ground. In like manner the skeleton spider of the present construction is adapted to afford means whereby the weight of the golf-balls can be
65 regulated in a very perfect manner up to the standard weight required in golf-balls, and which standard weight is an imperative ne-

cessity where a superior ball is to be made, but which is ignored in most composite balls because of the difficulty of attainment.

Having thus fully described our said invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination in a golf-ball, of a core formed of windings of elastic india-rubber threads, a centerless spider arranged centrally in said core and adapted to afford diametrical elasticity entirely across the core, and an inclosing shell of gutta-percha or the like, substantially as set forth.

2. The combination in a golf-ball, of a core formed of windings of elastic india-rubber threads, a centerless spider formed without a center and arranged centrally in said core so as to afford diametrical elasticity entirely across the core, and an inclosing shell of gutta-percha or the like, substantially as set forth.

3. The combination of a core made of windings of rubber thread, a supplementary core surrounding the same and made of rubber thread and spun fiber thread wound together upon the central core, and a shell of gutta-percha or the like arranged outside said cores, substantially as set forth.

4. The combination of a core made of windings of rubber thread, a supplementary core surrounding the same and made of rubber thread and spun fiber thread wound together upon the central core, a layer of woven fabric surrounding said supplementary core, and a shell of gutta-percha or the like arranged outside said layer of woven fabric, substantially as set forth.

5. The combination of a core made of windings of rubber thread, a supplementary core surrounding the same and made of rubber thread and spun fiber thread wound together upon the central core, a layer of woven fabric surrounding said supplementary core, a shell of gutta-percha or the like arranged outside of said layer of woven fabric, layers of woven fabric arranged outside said shell of gutta-percha, and a shell of gutta-percha or the like arranged outside said layers of woven fabric, the respective shells of gutta-percha being primarily formed of semispherical shells arranged with their joints or seams crossing each other and welded together in the process of manufacture, substantially as set forth.

6. In a golf-ball, the combination with the outer inclosing body of gutta-percha or the like, of a layer of fabric embedded in the outer surface of such body and with the usual projections on the periphery of such body projecting through the mesh of such woven fabric, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGE BROWNING.

CHARLES EDWARD BOUTWOOD.

Witnesses:

ROBERT BURNS,

HENRY A. NOTT.