J. W. SMITH.

PLAYING BALL.

APPLICATION FILED DEC. 23, 1907.

906,664.

Patented Dec. 15, 1908.

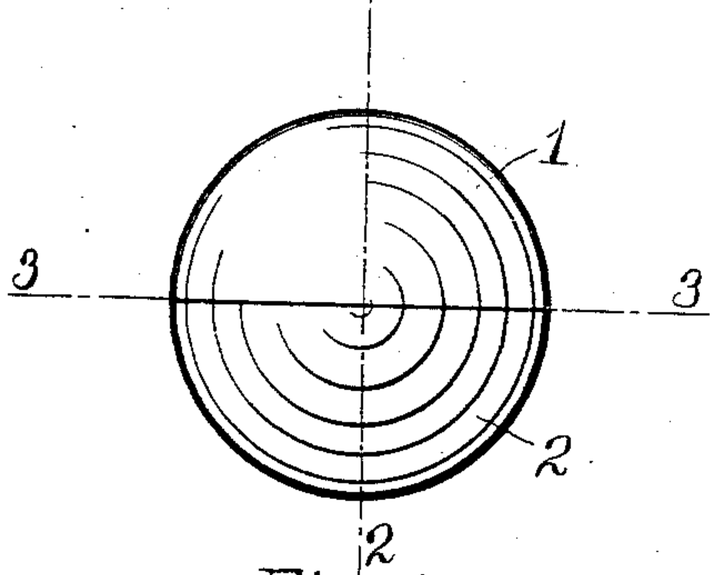

Fig. 1

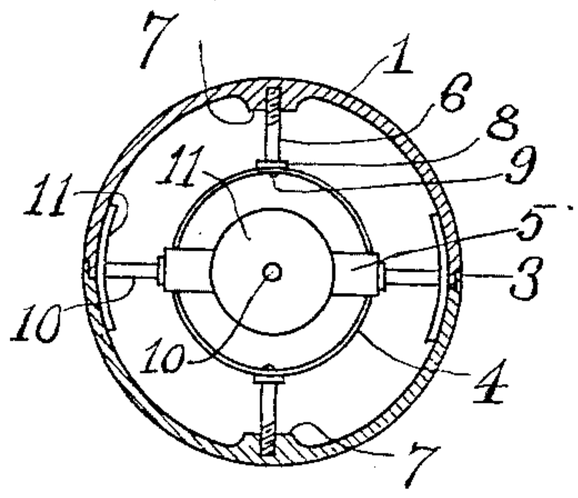

Fig. 2

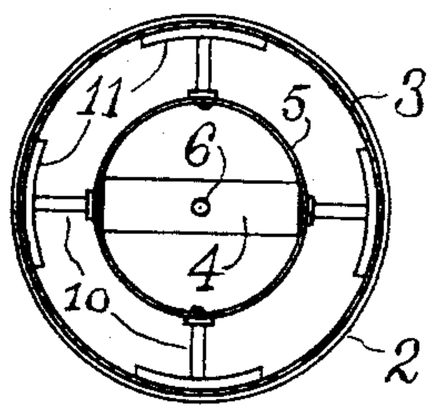

Fig. 3

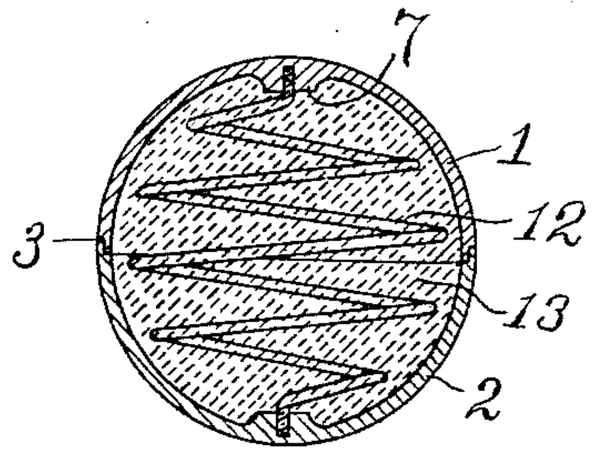

Fig. 4

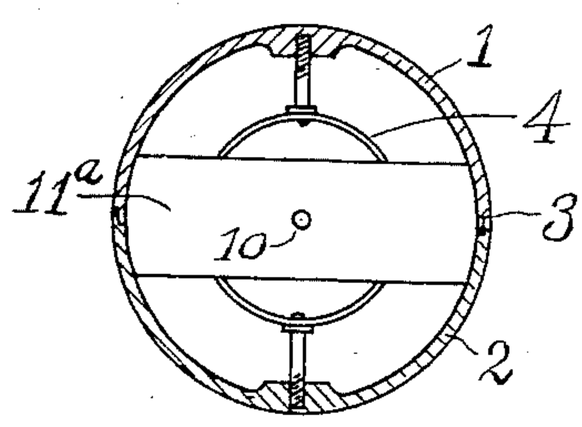

Fig. 5

WITNESSES:

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PLAYING-BALL.

No. 906,664. Specification of Letters Patent. Patented Dec. 15, 1908.

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To all whom it may concern:

Be it known that I, JAMES W. SMITH, a citizen of the United States, and resident of Lynn, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Playing-Balls, of which the following is a specification.

My invention relates to improvements in playing-balls, and consists primarily in providing yielding or resilient means for connecting together a pair of hemispherical shells made of suitable resilient material, such as steel.

Other features will hereinafter be fully described and pointed out in the claims.

While my invention is applicable to balls generally which comprise a pair of hemispherical shells, it is particularly designed for golf-balls, and as its embodiment in a golf-ball is sufficiently characteristic of the invention, I will address my description to such balls. It will be understood however that other balls are within the scope of my invention and are contemplated by the claims.

Referring to the drawings, which illustrate certain embodiments of my invention,—Figure 1 is an elevation of a ball containing my invention; Fig. 2 is a vertical section through line 2—2 of Fig. 1, showing one form of resilient tie or bond for holding the shells together; Fig. 3 is a horizontal section through line 3—3 of Fig. 1 showing the same form of bond or tie in plan; Fig. 4 is a vertical central section showing another form of resilient bond or tie for holding the shells together; and Fig. 5 is a vertical central section containing a further modification.

The ball comprises a pair of hemispherical shells 1 and 2, which may be made of any suitable, tough, resilient material, as spring metal or suitable composition. I believe steel to be the best material for this purpose. Some form of lap joint is provided at the juncture of the shells, as shown at 3, and said joint may be cemented or otherwise fastened together if desired, but I do not depend upon such fastening when employing my present invention. Within the hollow space thus provided by the two shells, is contained a resilient or spring bond or tie for holding the shells together. In my preferred form this tie consists of a frame-work made up of a pair of annular springs 4 and 5 one of which, 5, is in the plane of the joint 3, and the other of which, 4, is in a plane perpendicular thereto. For the purpose of nomenclature the joint 3 may be termed the equator of the sphere and the points 90° from the equator may be termed the poles. Arms 6, 6, connect said frame-work with the inner surfaces of the shells at their poles, binding the shells together. The arms 6, 6, are preferably screwed into nubs 7, 7, provided on the inner surfaces of the shells at their poles, and are secured at their other ends to the spring annulus 4, by being screwed therein, or by having a projection surrounded by a shoulder 8 and extending through an aperture in the annulus and headed on the other side as shown at 9.

In addition to arms 6, 6, a plurality of struts 10, 10, are arranged between the frame-work and the inner surface of the shells. Any number of such struts, and any desired arrangement of them, may be employed as desired, but I believe that four in addition to arms 6, 6, arranged 90° apart, will suffice. Said struts may be secured to annulus 5 in the same manner as arms 6, 6, or in any suitable manner. The struts, arms and spring frame serve yieldingly to distribute the impact of a blow upon the surface of the ball, no matter where the blow is struck to other parts of the ball. At the base of each strut is a foot or extension 11, which serves as a counter-weight to balance the ball about its center and off-set the weight of the nubs 7, 7, and which also serve as additional reinforcing means for the joint 3. The struts are preferably opposed one to another so as to be balanced about the center of the ball.

In the modification shown in Fig. 5 the spring frame, arms and struts are constructed as already described. Instead of a separate base 11 for such strut, however, there is provided an annular band 11^a extending completely around the ball and reinforcing the joint 3 at every point. This band is made of spring metal and may be cemented to the inner walls of the shells or merely make a tight fit therewith.

In Fig. 4 I have shown another form of spring bond or tie, consisting of a spiral spring 12 formed to follow approximately the contour of the inner surface of the ball, and screwed at its ends to nubs 7, 7, at the poles of the shells. Other forms of resilient bonds

or ties may be provided and are within the scope of my invention.

While no filler for the ball other than the spring frame itself, will usually be found necessary, it is desirable, under certain conditions, as where the spiral spring form is used, to fill the interior of the ball with, and embed the spring frame in, a plastic, resilient material such as rubber, a compound of rubber, or some similar elastic material. Such filler is shown in Fig. 4 at 13. A similar filler could be employed with other forms of spring frame if desired.

I claim:

1. A ball comprising a pair of hemispherical shells, and a bond or tie connecting the inner surfaces of said shells, said bond or tie comprising a spring normally under tension, adapted to hold said shells together and to yield in response to relative movement between the points of the shells connected by the bond, under the impact of a blow upon the outer surface of the ball.

2. A ball comprising a pair of hemispherical shells, and a bond or tie connecting the inner surfaces of said shells, said bond or tie including therein a spring frame-work normally under tension, adapted to hold said shells together and to yield in response to relative movement between the points of the shells connected by the bond, under the impact of a blow upon the outer surface of the ball.

3. A ball comprising a pair of hemispherical shells, and a bond or tie connecting the inner surfaces of said shells, said bond or tie comprising a spring normally under tension, adapted to hold said shells together and to yield in response to relative movement between the points of the shells connected by the bond, under the impact of a blow upon the outer surface of the ball, and a filler of plastic resilient material, filling said shells and embedding said spring.

4. A ball comprising a pair of hemispherical shells, a frame therein comprising a plurality of annular springs arranged in intersecting planes, and connections between said frame and the inner surfaces of said shells adapted to hold the same together.

5. A ball comprising a pair of hemispherical shells, a frame therein comprising a pair of annular springs arranged in planes perpendicular to each other, and connections between said frame and the inner surfaces of said shells adapted to hold the same together.

6. A ball comprising a pair of hemispherical shells, a spring frame-work therein connections between said frame-work and the inner surfaces of said shells adapted to hold the shells together, and a plurality of struts between said frame-work and the inner surfaces of said shells adapted to distribute the impact of a blow.

7. A ball comprising a pair of hemispherical shells, a frame therein comprising a pair of annular springs arranged in planes perpendicular to each other, connections between said frame and the inner surfaces of said shells adapted to hold the same together, and a plurality of struts between said frame and the inner surfaces of said shells, adapted to distribute the impact of a blow.

8. A ball comprising a pair of hemispherical shells, a spring frame-work therein, connections between said frame-work and the inner surfaces of said shells adapted to hold the shells together, and a plurality of struts between said frame-work and the inner surfaces of said shells adapted to distribute the impact of a blow, said connections and struts being arranged in opposition one to another whereby they will be balanced about the center of the ball.

9. A ball comprising a pair of hemispherical shells, a frame therein comprising a pair of annular springs, one of which is in the plane of the joint between said shells, and the other of which is in a plane perpendicular thereto, arms connecting the poles of said shells with the second named annular spring, and arms between said shells at their line of juncture and the first named annular spring.

10. A ball comprising a pair of hemispherical shells, each provided on its inner surface at its pole with a nub, a spring framework within the ball, arms connecting said nubs and said framework to hold the shells together, struts between said framework and the inner surfaces of said shells adapted to distribute the impact of a blow, and a base at the end of each of said struts adapted to balance the ball.

11. A ball comprising a pair of hemispherical shells, each provided on its inner surface at its pole with a nub, a frame within the ball comprising a pair of annular springs, one of which is in the plane of the joint between said shells and the other of which is in a plane perpendicular thereto, arms connecting said nubs with the second named annular spring, struts between said shells at their line of juncture and the first named annular spring, and a base at the end of each of said struts adapted to reinforce the joint between said shells and to balance the ball.

12. A ball comprising a pair of hemispherical shells made of resilient metal, a spring frame therein, connections between said frame and the inner surfaces of said shells to hold the shells together, a plurality of struts between the frame and the inner surfaces of said shells to distribute the impact of a blow, and a filler of plastic resilient material, filling said shells and embedding said frame.

13. A ball comprising a pair of hemispherical shells, a frame therein comprising a pair of annular springs, one of which is in the plane of the joint between said shells, and the other of which is in a plane perpendicu-

lar thereto, arms connecting the poles of said shells with the second named annular spring, and arms between said shells at their line of juncture and the first named annular spring, and a reinforcement for the joint between said shells consisting of a band encircling the ball on its inner surface at said joint.

Signed by me at Boston, Massachusetts, this nineteenth day of December, 1907.

JAMES W. SMITH.

Witnesses:
ROBERT CUSHMAN,
CHARLES D. WOODBERRY.