

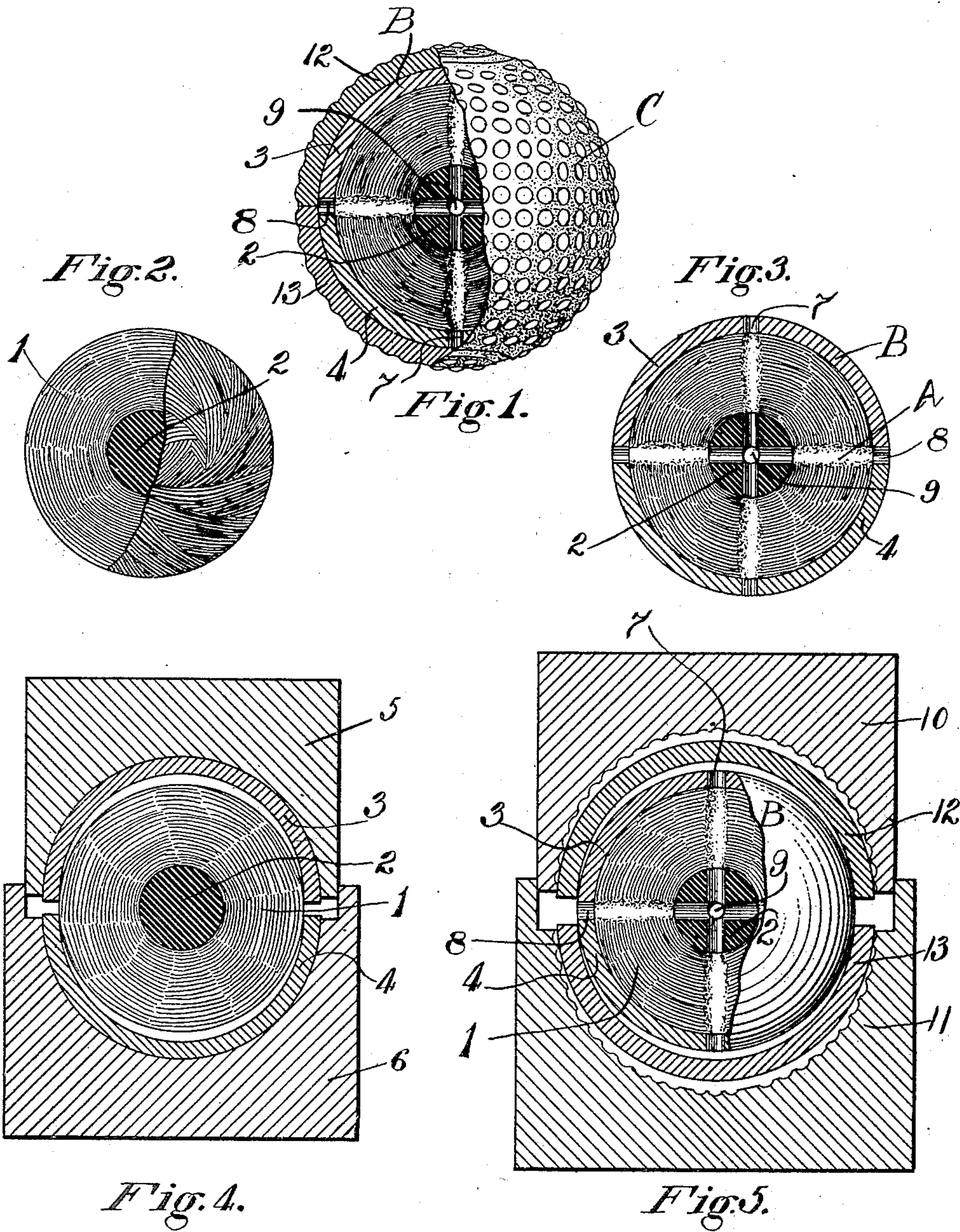
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Patented Nov. 18, 1902.

E. KEMPSHALL.
PROCESS OF MAKING GOLF BALLS.

(Application filed June 14, 1902.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

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PROCESS OF MAKING GOLF-BALLS.

SPECIFICATION forming part of Letters Patent No. 713,771, dated November 18, 1902.

Application filed June 14, 1902. Serial No. 111,771. (No model.)

To all whom it may concern:

Be it known that I, ELEAZER KEMPSHALL, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Processes of Making Golf-Balls, of which the following is a specification.

This invention relates to the manufacture of playing-balls, and especially to those used in the game of golf; and its object is to increase the liveliness or driving power of the ball.

In the accompanying drawings, Figure 1 is a part-sectional view of a ball made in accordance with my present improvements. Fig. 2 is a part-sectional view of a rubber-thread filling. Fig. 3 is a sectional view of my improved ball before an outer shell is applied thereto. Fig. 4 illustrates a stage in forming the Fig. 3 article, and Fig. 5 shows the final stage in forming the completed ball illustrated at Fig. 1.

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

For the filling of the ball I employ rubber threads 1, wound under tension preferably upon a gutta-percha center piece 2. Upon this filling I apply a shell B, preferably by compressing thereon hemispherical segments 3 and 4 of hard plastic material, such as celluloid or gutta-percha, (the latter being preferred,) the segments being compressed or welded by means of heating-dies 5 and 6. The heat renders the shell soft, so that it may weld and also be given a spherical form by the dies, and the pressure is maintained until the shell cools and hardens. In the ball thus produced I form diametrical holes 7, 8, and 9 at right angles to each other and intersecting at the center of the ball. In making the holes some of the rubber threads are cut at A, and owing to the tendency of the severed threads to assume their normal condition the rubber-thread sphere as a whole is caused to swell or at least to exert an expansive tendency upon all parts of the shell, tending to preserve its normal spherical form, whereby the ball is rendered highly elastic, since a blow which tends to distort the shell is preferably resisted by the expansive mass confined therein, so that the ball flies from

the club with phenomenal energy. While I prefer to make three perforations, still my invention is not limited to this number; nor is it essential in all cases that the perforations be at right angles and intersecting one another. Upon the ball thus formed I prefer to weld by means of heating-dies 10 and 11 a shell of celluloid or gutta-percha, preferably the latter, said shell consisting of segments 12 and 13. Thus the original shell B is reinforced and the holes 7, 8, and 9 are covered, the ball thus produced having excellent flying qualities. It is not essential, however, that the outer shell (indicated at C, Fig. 1) be used in all cases, and it may be formed of other material or materials within the scope of my invention. The shells weld together by reason of the heat and pressure of the dies, and thus prevent the formation of cracks in the inner shell B around the holes, due to the expansion of the filling, and also obviate liability of the inner shell B to distortion by reason of possible unevenness of the expansive pressure of the filling.

Having described my invention, I claim—

1. A process in making playing-balls, consisting in forming a body of windings of tensioned rubber thread, applying thereto a shell, piercing said shell and body of rubber so as to relieve the tension to permit the rubber to expand in radial directions, then incasing the pierced ball in a shell of plastic material.

2. A process in making playing-balls, consisting in applying to a center piece, a filling of windings of rubber under high tension, applying a shell thereto, cutting through said shell and said filling so as to sever the windings, applying an additional shell of softened plastic material under compression, and maintaining said compression while the shell cools and hardens.

3. A process in making playing-balls, consisting in winding a filling of rubber under tension, applying a shell of gutta-percha thereto, piercing through said shell and windings, applying a shell of gutta-percha under heat and compression, and maintaining the compression while the gutta-percha cools and hardens.

4. A process in making playing-balls, consisting in forming a filling of windings of rub-

ber under high tension, applying a shell of plastic material thereto, piercing said shell and filling diametrically in various directions so as to relieve the tension of said filling and
5 permit it to expand in radial directions, and compressing upon the pierced ball an outer shell of plastic material.
5. The process in producing a playing-ball, consisting in providing a yielding filling with
10 a shell of gutta-percha, then inclosing said shell within an outer shell of gutta-percha, and then subjecting the whole to compression and heat to an extent to weld said gutta-percha shells together, and maintaining the compression until the ball cools and hardens. 15

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