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METHOD OF COVERING BALLS

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Fig. 1

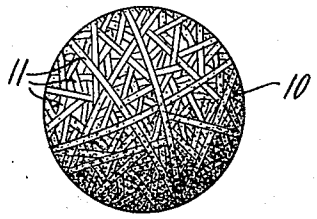


Fig. 2

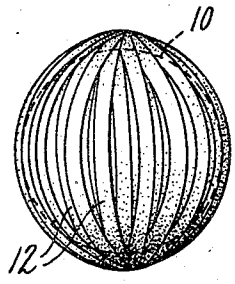
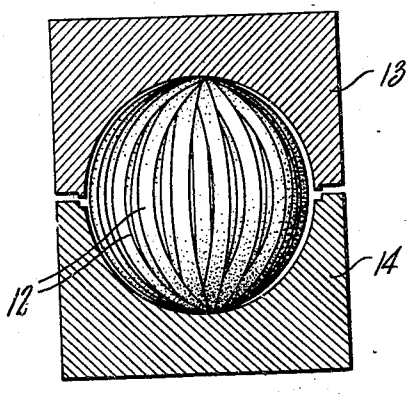


Fig. 3



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METHOD OF COVERING BALLS

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7 Claims. (Cl. 154—19)

This invention relates to a method of covering balls and more particularly to a method of covering golf balls.

At the present time, the standard procedure among golf ball manufacturers is to mold two half shells from golf ball covering stock and then place these half shells on the wound core or ball body, whereupon the half shells are molded about the ball in a spherical mold to form the golf ball cover.

The use of these half shells to form the ball cover presents several manufacturing difficulties such as, that of securing a firm bond between the shells where their edges meet, loose shells, shells not properly filled out, shells of improper weight, loose ends of the thread windings sticking out between the shells, trapped air within the shells, and a large number of operations required in covering the ball with these shells.

The present invention contemplates a method for covering golf balls and the like in which the wound core or ball body is enclosed in a seamless and jointless cover which is formed upon the ball body, as distinguished from the pre-formed half shells commonly employed heretofore.

In accordance with the present invention the cover forming stock of plastic material for the ball is made into a thin wide ribbon which is wound tightly upon the ball body to thereby enclose this body in a seamless cover.

If, however, this cover forming ribbon should be wound upon the ball body in the form of a perfect sphere, then difficulty would be experienced when such covered ball is molded in the usual mold formed of two cooperating semi-spherical sections, since in order to provide sufficient cover forming stock for the molding operation the covered ball would need to be somewhat larger in diameter than the interior of the spherical mold, with the result that when the semi-spherical mold sections are forced together about the covered ball they will unduly displace the windings forming such cover.

In accordance with the present invention, this difficulty is avoided by placing these cover forming windings upon the ball body so as to give the exterior of the ball an elliptical shape in which more of the cover forming stock is deposited at the opposite poles of the ball than at the equator. The covered ball is then placed in a mold such as a heated spherical mold formed of cooperating semi-spherical sections of well known construction, but it is important to so place the ball in the mold that its major axis will extend in the direction in which the mold sections are advanced to close the mold.

This causes an excess amount of cover stock to be positioned at the top and bottom of the mold so that when the mold sections are heated and forced together the cover forming stock will flow towards the mold juncture to thereby force out the enclosed air as the mold is closed. The reduced gauge at the equator of the ball prevents too much drag from being produced as the mold is closed.

A cover having the desired elliptical shape when formed upon a round ball body, may be produced by employing different types of windings of the cover forming material on the body, but the desired elliptical shape is preferably secured by winding the cover forming tape on the ball body in planes passing through the ball poles and lying upon the axis connecting said poles, so that the successive windings lie one on top of the other at the opposite poles but are spaced laterally from each other at the equator, to thereby cause the material to be deposited in greater thickness at the poles than at the equator.

The invention will be more fully understood from the following description when read in connection with the accompanying drawing wherein:

Fig. 1 is a side view of a wound core or ball body of usual construction for a golf ball;

Fig. 2 is a side view of an unfinished golf ball consisting of the ball body shown in Fig. 1 having a cover wound thereon in the form of an ellipse as herein contemplated; and,

Fig. 3 is a vertical sectional view through a mold of usual construction showing the ball of Fig. 2 therein and the mold ready to be closed.

The wound core or ball body 10 of Fig. 1 may be of well known construction, such for example as is formed by winding the rubber thread 11 upon a solid rubber, liquid or other type of core not shown.

The ball body 10 wound to the desired size, is in accordance with the present invention, provided with the cover forming material by winding tightly thereupon a thin ribbon of plastic material such as balata or gutta percha to provide the windings 12 which are deposited on the round ball body so as to form a cover having the above described elliptical shape in which the cover forming material is thicker adjacent the poles than at the equator.

These windings may be disposed laterally of the ball or longitudinal thereof with respect to its poles. It is deemed preferable, however, to

form such cover of a balata or gutta percha tape approximately a quarter of an inch wide and less than a hundredth of an inch thick and to wind this tape about the ball body as shown in Fig. 2 so that the successive windings pass through the opposed poles of the ball and lie one on top of the other at the poles, but are spaced laterally from each other at the equator, to thereby provide a cover which is considerably thicker at the poles than at the equator as will be apparent from Fig. 2.

The ball of Fig. 2 may then be placed in the mold of Fig. 3 which may be of usual construction and may consist of the pair of semi-spherical mold sections 13 and 14 having means, not shown, for forcing one semi-spherical section towards the other to thereby exert the desired molding pressure upon the confined ball in a well known manner.

It is important in carrying out the present invention that the covered ball of Fig. 2 shall have a major diameter considerably in excess of the diameter of the closed spherical mold, and it is also important that the ball be placed in the mold as shown in Fig. 3 so that the poles of the ball where the cover stock is of the greatest thickness will engage the bottom and top walls respectively of the mold sections. Then when the mold is heated and pressure is applied to close the same the plastic covering material at the poles will be softened by the heat and will flow under the mold pressure towards the point of mold juncture to thereby force out the enclosed air and distribute this cover stock evenly about the ball body to form a seamless and jointless round cover that snugly embraces and is firmly bonded to the ball body 10. It is desirable in many cases to provide the covered ball with a diameter somewhat less than the diameter of the mold as will be apparent from Fig. 3, but this is not essential since good balls can be made by causing the ball to have a minor diameter as large or slightly larger than the diameter of the mold since the cover will yield somewhat to enter the mold.

The molded spherical cover on the ball may then be painted or other wise finished in the usual manner to prepare the golf ball ready for the market.

Having thus described my invention what I claim and desire to protect by Letters Patent is:

1. The method of providing a ball body with a jointless outer cover which comprises, unevenly distributing cover forming windings of tensed plastic material on a ball body with the material thickest at opposed poles and decreasing in thickness toward the equator, and then compacting and evenly distributing the cover material on said body by molding in a spherical mold.

2. The method of providing a ball body with a jointless outer cover which comprises, unevenly distributing cover forming windings of tensed heat plastic material on a ball body with the material thickest at opposed poles and decreasing in thickness toward the equator, and then compacting and evenly distributing the cover material on said body by molding in a heated spherical mold.

3. The method of providing a ball body with a jointless outer cover which comprises, winding in substantially a single plane a tensed narrow strip of plastic material on a ball body and at the same time turning said ball body on a single axis substantially in said plane as the successive windings are formed to thereby deposit a greater thickness of the material adjacent the poles of said axis than at the equator, and then compacting and evenly distributing the winding material on said body by molding in a spherical mold.

4. The method of providing a ball body with a jointless outer cover which comprises, winding tensed plastic material on a ball body so that the successive windings lie one on top of the other at opposed poles but are spaced laterally from each other at the equator to deposit the material thickest at the poles and decreasing in thickness toward the equator, and then compacting and evenly distributing the cover material on said body by molding in a spherical mold.

5. The method of providing a golf ball body with a jointless outer cover which comprises, winding tensed heat plastic material on a ball body so that all windings pass through the ball poles so as to deposit the material thickest at the poles and of less thickness adjacent the equator, and then compacting and evenly distributing the cover material on said body by molding in a heated spherical mold.

6. The method of providing a ball body with a jointless outer cover which comprises, rotating a ball body on a fixed axis while winding thereon a tensed narrow strip of heat plastic material in a plane at right angles to said axis, and also rotating said body throughout said winding operation on a single axis disposed at right angles to said fixed axis to thereby superimpose the windings at the poles and deposit the material thickest at the poles and of decreasing thickness toward the equator, and then compacting and evenly distributing the material on said body by molding in a heated spherical mold of less diameter than the polar diameter of the covered ball and greater diameter than the equator diameter of said ball.

7. The method of providing a ball body with a jointless outer cover which comprises, rotating a ball body on a fixed axis while winding thereon a tensed narrow strip of heat plastic material in a plane at right angles to said axis, and also rotating said body periodically throughout said winding operation on a single axis disposed at right angles to said fixed axis to thereby superimpose the windings at the poles and deposit the material thickest at the poles and of decreasing thickness toward the equator, and then compacting and evenly distributing the material on said body by molding in a heated spherical mold of less diameter than the polar diameter of the covered ball and greater diameter than the equator diameter of said ball.

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