

UNITED STATES PATENT OFFICE

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METHOD OF MAKING A GOLF BALL

Boris Bogoslawsky, New York, N. Y.

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3 Claims. (Cl. 154-17)

This invention relates to the manufacture of golf balls and pertains more particularly to methods of applying the outside cover thereto.

According to present commercial methods of making golf balls, a substantially spherical ball body is formed by winding a strand or strands of rubber, under tension, about a substantially spherical core or center. The ball body thus formed is then supplied with a cover, usually of balata or gutta-percha.

In applying the cover, the usual practice is to preform hemispherical shells of the covering material which said shells are placed over the ball body and caused to adhere thereto by the application of heat and pressure. The heat and pressure are applied in a mold which brings the covered ball to approximately true spherical shape and applies any desired surface configuration thereto, such as the well known dimples, for example.

It is an object of the present invention to apply covering material to the ball body directly in plastic form, thereby permitting more intimate adhesion between the cover material and the ball body.

A preferred embodiment of the invention selected for purposes of illustration is shown in the accompanying drawing, in which:

Figure 1 is a vertical section through the mold and pressure cylinder.

Figure 2 is a section on the line 2-2 of Figure 1.

In my copending application for Letters Patent Serial No. 122,957, now Pat. No. 2,153,408, I have described a process for the manufacture of a golf ball body from a strand or strands of rubber wound under tension, in which the ball body is formed by winding the said strand or strands on a mandrel. The said mandrel extends radially through the ball body, and the two ends of the mandrel project beyond the peripheral surface of the ball body.

As described in said copending application, I proposed to withdraw the mandrel from the ball body after completion of winding, and then to apply the cover in the usual manner, that is, by molding preformed shells thereon by heat and pressure. According to the present invention, however, I let the said mandrel remain in the ball body until after the cover is applied, and I utilize the said mandrel to support and center the ball body in the mold during the application of the cover material in plastic form.

Referring to the drawing, a ball body of the type described is illustrated at 1 in Figures 1 and

2, said ball body having a mandrel 2 extending radially therethrough and projecting beyond the peripheral surfaces of the ball body. Preferably the said mandrel may have a weakened portion 3 at the center of the ball, so that when it is desired to withdraw the mandrel, it may be broken at the weakened portion, and the two halves may be separately withdrawn.

The mold comprises two complementary mold sections 5 and 6 having a spherical cavity 7 therein, the surface of which may be formed to provide any desired surface configuration on the finished ball.

The upper surface of the lower mold section 6 and the lower surface of the upper mold section 5 are provided with matching semi-cylindrical grooves 8 to receive the projecting ends of the mandrel. If the ball is wound about the mid-point of a mandrel of a size to fit the grooves 8, it will be seen that the ball bodies will be accurately centered in the spherical cavity, and will remain accurately centered during the subsequent steps of the process, since the mandrel provides a substantially rigid support therefor.

After the ball body is placed in the mold, the mold is closed and locked, as by bolts 9, and the plastic covering material such as balata or gutta-percha heated to soft plastic condition is injected through the passage 10. In order to permit the discharge of air from the mold cavity as the covering material is injected, one or more small vent passages 11 may be provided extending from the cavity to the outside of the mold. These passages, of course, should be located substantially diametrically opposite the injection passage 10.

The covering material may be injected in any suitable manner as by a pressure cylinder 15 connected to the injection passage 10 by a tube 16. Pressure may be applied by means of a piston 17 operated by a shaft 18 threaded into the cover 19.

Balata, gutta-percha and similar covering materials become plastic at relatively low temperature, and any suitable means may be provided for heating the pressure cylinder and mold to maintain the plastic condition during injection.

Injection of the covering material is continued until it begins to be exuded through the vent passages 11. If these passages are very small, the pressure required to force the covering material through said passages may be sufficient to cause the desired penetration of covering material into the interstices between the windings of the ball body, but if not, the enlarged openings 20 of

the vent passages may be closed by suitable plugs after all of the air has been displaced from the cavity, after which additional pressure may be applied.

- 5 After the covered ball is removed from the mold, the pieces of the mandrel or the pins, as the case may be, are extracted from the ball. The small holes remaining in the cover may be subsequently filled with plastic material or paint or may be closed by touching with a heated tool.

10 It will be understood that the invention may be variously modified and embodied within the scope of the subjoined claims.

I claim as my invention:

- 15 1. The method of making and covering a golf ball which comprises winding a spherical ball body on a mandrel extending diametrically there-through and projecting radially beyond the peripheral surface thereof, supporting said ball body in a spherical mold cavity by engagement
20 of said mandrel with the walls of said mold, and injecting covering material into said cavity.

2. The method of making and covering a golf ball which comprises winding a spherical ball body on a mandrel extending diametrically therethrough and projecting radially beyond the peripheral surface thereof, supporting said ball body in a spherical mold cavity by engagement of said mandrel with the walls of said mold, centering said ball body in said cavity in a direction lengthwise of said mandrel, and injecting covering material into said cavity.

3. The method of making and covering a golf ball which comprises winding a spherical ball body on a mandrel extending diametrically there-through and projecting radially beyond the peripheral surface thereof, supporting said ball body in a spherical mold cavity by engagement of said mandrel with the walls of said mold, injecting covering material into said cavity, and there-
after withdrawing said mandrel.

BORIS BOGOSLOWSKY.