Feb. 25, 1936. J. M. OLDHAM 2,031,786

APPARATUS FOR MAKING GOLF BALLS

Original Filed Nov. 13, 1933

Fig. 2

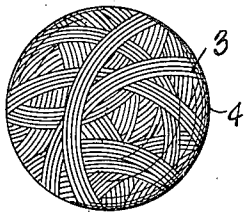
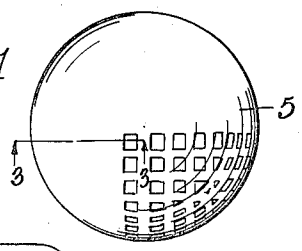


Fig. 1



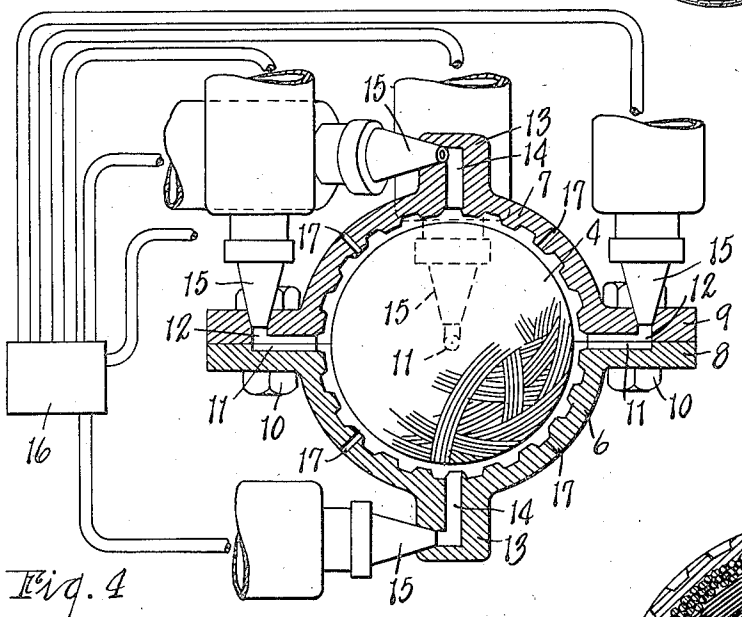


Fig. 4

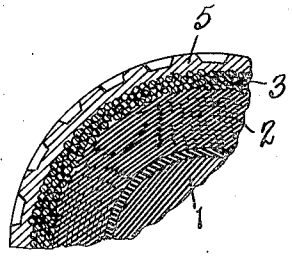


Fig. 3

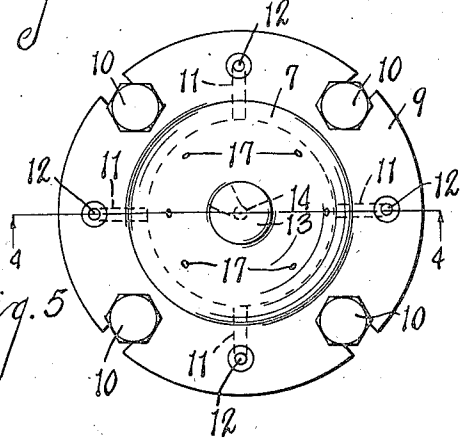


Fig. 5

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APPARATUS FOR MAKING GOLF BALLS

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Original application November 13, 1933, Serial No. 697,770. Divided and this application April 16, 1934, Serial No. 720,721

6 Claims. (Cl. 18—30)

This application is a division of my application, Serial No. 697,770, filed November 13, 1933, for Method and apparatus for making golf balls.

The main objects of this invention are:

First, to provide an improved apparatus for making golf balls and the like.

Second, to provide an apparatus of this character for covering golf balls with a shell or coating of plastic composition molded thereon and intimately bound thereto.

Third, to provide an apparatus having the above desirable features and characteristics and which is simple and economical in its parts and very efficient and effective in operation, the golf balls produced thereby having a plastic coating of uniform thickness with the desired surface configuration.

Objects relating to details and economies of my invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a side elevation of a golf ball produced by my improved apparatus, only a fragment of the surface configuration being illustrated.

Fig. 2 is a side elevation of the golf ball body or core prior to the application of the shell or coating.

Fig. 3 is an enlarged fragmentary section on a line corresponding to line 3—3 of Fig. 1, the parts being shown conventionally and without regard to exact proportions.

Fig. 4 is a fragmentary view of my improved apparatus shown partially in section on line 4—4 of Fig. 5, the source of coating composition being conventionally illustrated.

In the accompanying drawing, see particularly Figs. 2 and 3, 1 represents the center, 2 the body winding of elastic strands under tension, and 3 a winding of fibrous strands resulting in a body or core designated generally by the numeral 4. The shell or coating 5 is molded upon this body. It should be understood, however, that my apparatus is adapted for coating or covering golf ball bodies which do not have the feature of the fibrous non-elastic strand winding 3, it being the common commercial practice at the present time to apply the pre-molded shell directly to the elastic strand winding of the body.

The apparatus shown in Figs. 4 and 5 comprises a mold consisting of the complementary hemispherical sections 6 and 7 having coacting flanges 8 and 9 respectively, detachably secured together by means of the bolts 10. These flanges have coacting grooves in their meeting faces providing sprue passages 11, the sprue passages having inlet portions 12 in the flange 9 of the section 7. These sprue passages 10 are disposed in 90-degree angular relation so that they are in diametrically opposed pairs.

The sections 6 and 7 have central bosses 13. These bosses 13 have sprue passages 14 therein with lateral inlet openings, the sprue passages 14 being disposed in 180-degree angular relation to each other and in 90-degree angular relation relative to the sprue passages 11. These sprue passages have conical mouths adapted to receive the conical nozzles 15 which are all preferably connected to a common source of coating composition in plastic condition and under pressure, designated conventionally at 16.

The mold is provided with a plurality of small vent openings 17 located at 90-degree angular relation relative to each other and centrally relative to the adjacent sprue openings.

The body is placed within the spherical mold loosely; that is, it is free to center itself therein under the action of the coating composition which is introduced simultaneously through all the sprue holes, and this and the venting cause the body to properly center itself so that the coating is of uniform thickness. I thus avoid the use of centering means within the mold.

The coating composition is preferably of a character that does not require the application of heat after it is introduced into the mold, but it will be understood that it is introduced into the mold in uniform plastic condition and under substantial pressure so that it flows into all the interstices in the covering and in the mold which is provided with suitable interior configuration to provide the desired configuration of the ball as is indicated in the drawing.

The coating composition may be of uniform color and of any color desired. Various coating compositions may be used. I have used certain types of resinous compositions and also balata compositions of the general type of those now used in pre-formed or molded golf ball shells which are commonly applied to the bodies in pre-formed condition by means of molding under heat and pressure.

I have not illustrated the mold as provided with heating means. It will be understood that with certain compositions heating of the mold is of advantage and that the mold may be heated by various means, such as steam or electricity, for

example, but as such heating means forms no part of the invention I have not illustrated the same herein.

It should also be understood that certain coating compositions are rendered fluid by heat and at present I prefer such a composition rather than one which is rendered fluid or plastic by solvents as the presence of solvents introduces a problem of evaporating the solvents without injury to the coating. The plasticity or fluidity of the coating composition should be such that under pressure it may be introduced into the mold and forced by the pressure into close binding engagement and adhesion with the surface strands of the body, and when the body is wound with fibrous strands there is a measure of penetrating engagement.

The practice of my invention results in golf balls of long and accurate flight.

I have not attempted to illustrate certain modifications in the apparatus which I contemplate as it is believed that this disclosure will enable those skilled in the art to efficiently practice my invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A mold for applying a shell to golf balls, comprising complementary segmental hemispherical sections having flanges on the edges thereof, the flanges having sprue passages therein opening into the mold in 90-degree angular relation, the sections having central opposed sprue passages opening in the mold in 90-degree angular relation relative to the passages in said flanges, the molds also having vent openings disposed in 90-degree angular relation to each other and centrally relative to the adjacent sprue passages.

2. A mold for applying a shell to golf balls, comprising complementary segmental hemispherical sections having flanges on the edges thereof, the flanges having sprue passages therein opening into the mold in 90-degree angular relation, the sections having central opposed sprue passages opening in the mold in 90-degree angular relation relative to the passages in said flanges, the mold being provided with vents.

3. A mold for coating golf balls, comprising complementary segmental sections having a plurality of pairs of diametrically opposed sprue holes and vent openings disposed in uniformly spaced angular relation relative to said sprue holes, the interior of the mold being unobstructed permitting a golf ball body arranged therein to center itself under the action of the coating composition injected simultaneously through the opposed sprue holes.

4. A mold having a spherical cavity and symmetrically arranged sprue holes of the same size and vent openings of the same size radially disposed relative to the center of said cavity so that a spherical core, otherwise unsupported within said cavity is centered therein by the action of a molding plastic injected into said cavity through said sprue holes at the same time and at the same pressure.

5. A mold having a cavity and sprue holes and vent openings arranged relative to said cavity so that a molding plastic injected into said sprue holes sets up symmetrical centering forces or components on a core otherwise unsupported within said cavity, the plastic setting with the core centered therein.

6. In a molding apparatus of the character set forth the combination of a mold having a cavity and sprue holes and vent openings, and means for injecting a plastic into said sprue holes simultaneously, said sprue holes and vent openings being arranged so that the injected plastic acts to center a core otherwise unsupported within said cavity until the plastic sets.

JOHN M. OLDHAM.