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J. R. GAMMETER

2,201,691

METHOD OF MAKING GOLF BALL CORES

Filed Jan. 27, 1939

FIG. 1

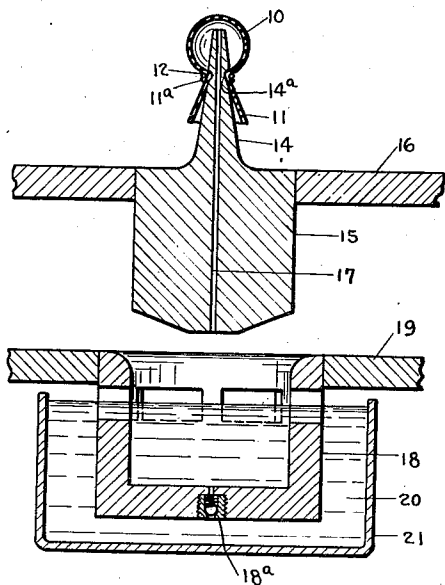


FIG. 2

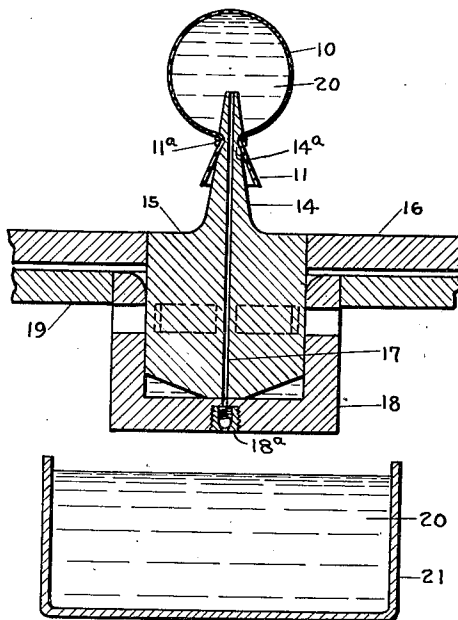


FIG. 3

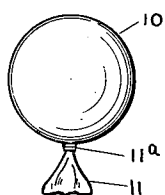


FIG. 4

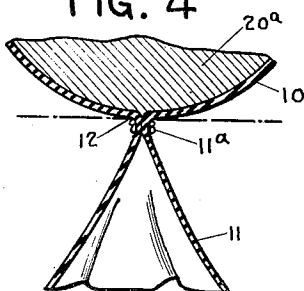


FIG. 5

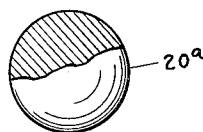


FIG. 6

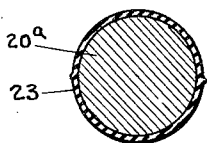


FIG. 7

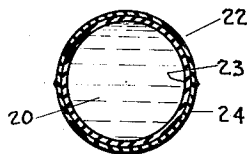
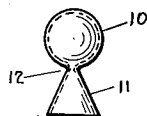


FIG. 8



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2,201,691

METHOD OF MAKING GOLF BALL CORES

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Application January 27, 1939, Serial No. 253,141

4 Claims. (Cl. 154—18)

This invention relates to playing ball cores and in particular relates to a method and apparatus for making liquid golf ball cores.

It has been a practice in the past to manufacture golf balls by winding vulcanized thread rubber on a suitable core to form a ball center, and then bonding thereon a cover of rubber, balata, gutta percha, or the like. One type of core in common use comprises a hollow rubber casing filled with a mobile liquid, such as water, glue, honey etc. The general practice has been to freeze the liquid into a spherical pellet in a mold, and while still frozen to form a suitable rubber casing about the pellet, after which the cover is cured in another mold. However, when certain liquids such as honey, paste, or oily substances, are used, they tend to stick to the core-shaping mold and it is difficult, if not impossible, to remove them without breaking or blemishing the same. For this reason the substances used for filling the cores have been limited to fillers which least tend to stick to a shaping mold.

An object of this invention is to provide an improved, efficient, inexpensive, and simple method of making golf ball cores.

Another object of the invention is to provide a method of making golf ball cores in which a wide variety of liquid or mobile fillers may be used.

These and other objects of the invention will be manifest from the following brief description and the accompanying drawing.

Of the accompanying drawing:

Figure 1 is a sectional view of apparatus for forming ball cores in accordance with the invention, in an initial stage of the process.

Figure 2 is a view similar to Figure 1 after a forming bag has been filled with fluid.

Figure 3 is a view showing a filled bag after removal thereof from the forming apparatus.

Figure 4 is an enlarged fragmentary cross-section of the filled bag shown in Figure 3 after freezing the fluid therein.

Figure 5 is a view, partly broken away and in section, of a spherical pellet formed by the freezing operation.

Figure 6 is a cross-section through a frozen pellet having a casing of uncompounded rubber formed thereon.

Figure 7 is a view similar to Figure 6, showing a finished core.

Figure 8 is an elevation of one of the bags used in the pellet forming operation.

Referring to Figures 1, 2 and 8 of the drawing, 10 may be a spherical bag or sac, preferably

of thinly dipped vulcanized latex, having an outwardly flaring or generally conical shaped, flexible skirt portion 11 extending from a constricted portion 12 thereof, closely adjacent the wall of the sphere and providing a restricted inlet therein. The skirt 11 is adapted quickly to be slipped over a nozzle 14 extending upwardly from a block or ram 15 carried by a support 16. Nozzle 14 may be provided with a circumferential groove 14^a for receiving the constricted portion 12 of the bag, the latter being yieldably retained on the nozzle by means of thread-rubber, or elastic bands 11^a, for example, wrapped and tied tightly around skirt adjacent the bag. A suitable communicating passage 17 may extend from the bottom of ram 15 to the end of nozzle 14.

Directly beneath the ram 15 may be a cup-shaped receptacle 18, carried by a vertically reciprocable supporting member 19, and adapted to receive a measured volume of mobile fluid 20 from a tank 21. The fluid used for this purpose may be water, honey, glue, or any suitable liquid or mobile substance. Member 19, which is adapted snugly to receive ram 15, is movable upwardly as shown in Figure 2, to inject into bag 10 through passage 17, a measured volume of fluid 20 under pressure. This fluid pressure preferably is sufficient to expand bag 10 to a predetermined diameter when the receptacle 18 has made a full stroke upward, and the expansion stretches the material of the bag to a substantial degree, thereby placing the material of the bag under considerable tension. A suitable spring-pressed ball valve 18^a is provided at the bottom of receptacle 18 to break the vacuum therein to facilitate separation thereof from ram 15 upon downward movement of the receptacle.

When the bag 10 has been filled with fluid 20, as shown in Figure 2, it may be removed readily by slipping it over the end of nozzle 14 against the action of the yielding tie 11^a, which immediately contracts and closes the constricted portion 12 of the bag against outward passage of fluid therefrom (see Figure 3). The bag and its contents take the form of a perfect sphere due to introduction of fluid or mobile material under pressure in the bag whereby the usual molding process is entirely avoided.

As the filled bags 10 are removed from nozzle 14 they may be placed in trays and placed in a suitable freezing device to freeze the liquid in the bags 10 into solid spherical pellets 20^a, or otherwise treated to solidify the material therein. After the fluid is thus frozen or solidified the

skirt portion 11 of the bag may be severed close to the surface of the bag inside of the tie 11^a (see Figure 4), whereby the bag will snap off the pellet 20^a, as will be understood (see Figure 5).

- 5 As best shown in Figures 6 and 7, the solidified pellets 20^a may now be capped either with a self-sealing casing 22 comprising a layer 23 of uncompounded rubber stock or a layer 24 of vulcanized, compounded rubber stock, or both.
- 10 Where compounded stock is used, the capped pellets may then be placed in suitable vulcanizing apparatus to cure the outer layer 23, this last operation of course liquefying the pellet 20^a.

- The finished cores may be placed in freezing apparatus, to again freeze the liquid therein preparatory to the usual thread-rubber winding step for forming the golf ball center, after which the center may have bonded thereto a cover of balata, gutta percha, rubber, or the like, in the usual manner.

- 20 In carrying out this invention the bags 10 may be quickly applied over filling nozzles 14, yieldably secured thereon by means of the tie 11^a, filled with liquid 20 to predetermined volume or size, removed from the nozzles, and then placed in the freezing or other solidifying apparatus. The process does not require the use of a mold for shaping the liquid cores into spherical pellets by freezing, and therefore the process is not limited to the use of liquid or mobile substances which do not lend themselves well to molding processes heretofore employed, and production of broken or blemished pellets is materially decreased.

- 25 Modifications of the invention may be resorted to without departure from the spirit thereof or the scope of the appended claims.

What is claimed is:

1. The method of making pellets which comprises making a bag of thin flexible elastic material, filling said bag with a predetermined volume of liquid or mobile substance under pressure thereby substantially to stretch the wall of

said bag, solidifying said substance in the bag to form a pellet, and removing said bag from the pellet thus formed.

2. The method of making liquid ball cores which comprises making a thin flexible elastic spherical bag, injecting a liquid or mobile substance under pressure into said bag thereby to expand said bag to determinate size, the wall of said bag stretching substantially as it expands, solidifying the liquid in said bag to form a pellet, removing the bag from said pellet, and applying a casing of impervious material about said pellet and liquefying the material of said pellet.

3. The method of making liquid ball cores which comprises providing a thin flexible elastic bag, injecting a liquid or mobile substance under pressure into said bag thereby to expand said bag to determinate size, the wall of said bag stretching substantially as it expands, freezing the liquid in said bag to form a pellet, removing the bag from the frozen pellet, and enclosing said frozen pellet in an impervious rubber casing and liquefying the frozen material.

4. The method of making liquid ball cores which comprises providing a bag made of thin elastic or resilient material and having a skirt portion about an opening therein, applying said skirt portion over the nozzle of a liquid supply device, tying said skirt about said nozzle with elastic or resilient material under tension, injecting liquid or mobile material under pressure into said bag to fill and expand the same whereby the wall of the bag is substantially stretched, removing said bag from said nozzle with the liquid retained therein by contraction of said tying material, solidifying the liquid in said bag to form a pellet therein, severing said skirt portion and tying means from the pellet, whereby said expanded bag will snap off the pellet by virtue of its elasticity or resilience, and enclosing said pellet in a casing of impervious material and liquefying the material of said pellet.

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