March 24, 1959 F. E. WILEY 2,879,179

METHOD OF APPLYING PLASTIC COMPOSITION COVERS TO BASEBALLS

Filed April 2, 1956

FIG. 1.

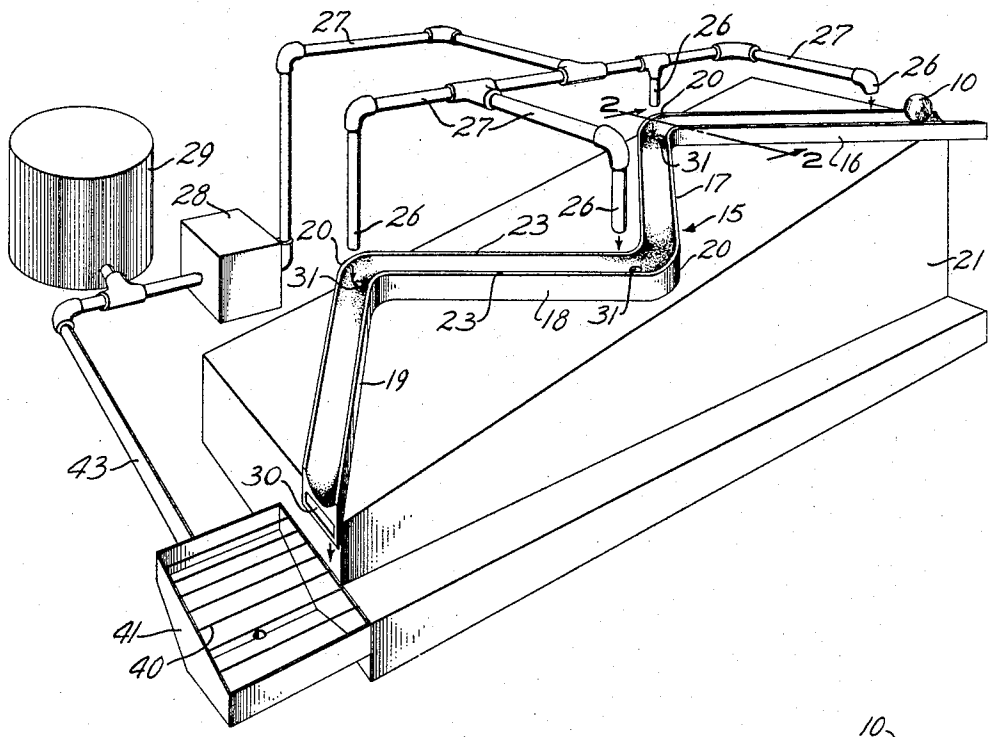


FIG. 2.

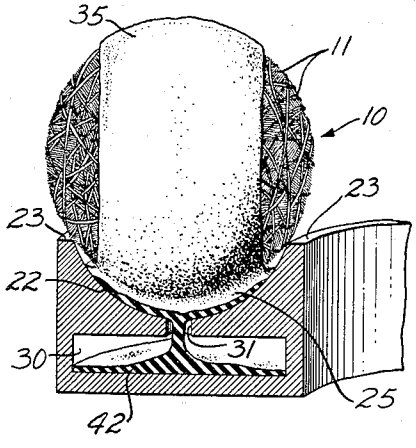
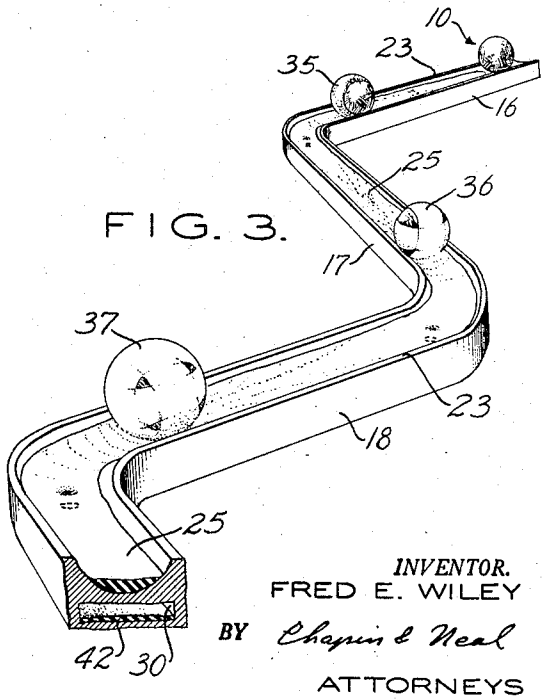


FIG. 3.



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United States Patent Office 2,879,179 Patented Mar. 24, 1959

2,879,179

METHOD OF APPLYING PLASTIC COMPOSITION COVERS TO BASEBALLS

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Application April 2, 1956, Serial No. 575,562

4 Claims. (Cl. 117—94)

This invention relates to a method for applying rubber or other plastic coverings to baseballs and the like.

One object of the invention is to provide a functionally improved cover for such balls and to effect the application of such covers in a more economical and speedier manner.

Further objects are to secure a more uniform covering of the ball and better adhesion of the cover to the body of the ball.

A further object is to provide a cover of a latex composition which more closely approximates a sewed leather cover in appearance and service than can be obtained by presently available methods and machines.

In the accompanying drawings,

Fig. 1 is a generally perspective view of apparatus embodying the invention,

Fig. 2 is a sectional view substantially on line 2—2 of Fig. 1 showing a ball with the initial band of covering applied; and

Fig. 3 is a detail view illustrating the applications of successive cover bands.

In the manufacture of the type of baseball to which the present application applies the body 10 of the ball is formed by building up a plurality of windings 11 of strands of suitable material formed of suitable textile fibres, natural or synthetic.

Heretofore it has been a practice to coat the interior of a heated mold, formed in two halves, with a thick latex composition, dip the ball body in a bath of the same or similar composition, place the dipped ball in the mold, close the mold to force the covering material into the windings and to squeeze out surplus material at the mating edges of the mold and then subjecting the mold to heat to cure, or otherwise harden and dry out the cover.

Such procedures have the disadvantage that both the ball body and the mold have to be latex coated, and frequently in the dipping step air bubbles are entrapped in the latex. Further, since the respective coatings must be viscous a substantial movement of the material on the ball body and mold may take place before they are brought together in the mold so that substantial flow of the material may be required in the closed mold if the ball is to be uniformly covered. The weight of the ball in the mold and the possible different viscosities of the two coatings, due to evaporation depending on the elapsed time since the coatings were applied, all tend to produce a lack of unformity in the finished cover. Furthermore, in these prior procedures the coatings contain a substantial amount of moisture which must be driven into or be absorbed by the adjacent portion of the ball body as the cover cures or sets in the closed mold with a resulting lack of uniform adhesion between the cover and ball body.

Most if not all of these difficulties are removed or their effects reduced by the procedures of the present invention.

According to the present invention the ball bodies are

prepared in the usual, or any suitable manner, and the latex composition forming the cover is applied to the body in the form of successive circumferential bands of a viscous latex composition applied at successively different equatorial angles until the ball body is completely covered, each such band being built up as a plurality of convolute "windings" of the viscous latex composition.

Referring to the drawings the ball body is rolled by gravity down a trough generally designated at 15 and formed by successive straight sections or portions 16, 17, 18 and 19, each section extending at substantially right angles to the preceding section and connected thereto by curved portions 20 of relatively sharp radius. The trough 15 is supported by a base 21 which may take any suitable form but which in any event inclines the trough at a sufficient angle to cause the ball bodies to roll downwardly from the upper end of the trough to the lower end under the force of gravity. As best shown in Fig. 2 the trough is of less width than the diameter of the ball body to be covered and is provided with a curved bottom 22 terminating in upwardly directed flanges 23 forming rails along which the ball bodies roll, with the intermediate portion of the body extending into the trough but spaced from the bottom and sides hereof.

Viscous latex or other composition 25 which is to form the cover of the ball is supplied to the trough at points adjacent the upper end of each straight trough section through nozzles 26, supplied through a suitable system of pipes, as generally indicated at 27 from a suitable pump indicated at 28 which is supplied from a reservoir 29. The body of the trough 15 is formed with a conduit 30. The bottom of the trough is formed with openings 31 communicating with the conduit 30, an opening being provided at the upper end of each straight section 17, 18 and 19, upwardly of the point of discharge of the adjacent nozzle 26 and approximately on the line of juncture of the upper end of the trough section and the adjacent curved section 20.

With a stream of covering composition flowing down each section of the trough ball bodies 10 are fed in timed succession to the upper end of trough section 16 and roll down the section with an equatorial portion engaging in the flowing stream of the covering composition with the result that the ball bodies pick up successive convolutions of the composition to form a band 35, Figs. 2 and 3. As each ball body reaches the lower end of section 16 its direction is abruptly changed as it rounds the sharply curved section 20 at the lower end of section 16 and as it progresses down seciton 17, a second equatorial band of composition 36 (Fig. 3) is applied to the ball body at an angle to band 35 as the ball body rolls down section 17. Similarly as the ball body again changes its direction at the upper end of section 18 a third band of composition 37 is applied to the ball body at an angle to band 36, and a fourth band, not shown, is applied at an angle to band 37 to complete the coverage of the ball body as it rolls down section 19.

As shown, the trough sections are of a length to provide a plurality of rotations of the ball body and hence a plurality of convolutions of the composition in each band. The trough sections at least should equal in length the circumference of the ball so that a complete band is formed in each trough section.

As the ball leaves the lower end of trough section 19 it rolls onto a suitable screen 40 positioned substantially at the level of the end of the trough and over an open tank or basin 41 into which the overflow 42 from conduit 30 discharges. The covering composition received in the tank 41 from conduit 30 and drainage from the balls resting on screen 40 is returned to the pump 28 through a pipe 43.

As the covering composition is picked up by the rolling

ball body it is kneaded by the successive rotations of the body into the textile windings forming the outer portion of the ball body and into the edges of the preceding bands, and the rolling engagement of the ball with the composition minimizes the entrapment of air in the bands as they are formed. Further, the discharge of the covering composition from nozzles 26 and the flow of the composition through openings 31 may be adjusted to maintain substantially constant and equal depths of composition in the several sections or legs of the trough. All of these factors together with the adjustment or selection of the degree of inclination of the trough and the viscosity of the covering composition, controlling the rate of movement of the composition and balls, provide a more dense and uniform cover of desired thickness, all resulting in a superior and better controlled product than is obtainable by prior methods and apparatus.

It will be understood that while, as shown, the trough 15 is shown as comprising four straight sections at right angles to each other, a larger number of sections at various angles to each other may be employed if desired.

Preferably and for most uniform results the ball bodies are introduced at the upper end of the trough at a rate so that each leg of the trough contains only one ball at a time.

The balls are removed from the screen 40 and placed in a mold, formed in two halves and the mold closed under light pressure, the mold being heated to a temperature to complete the drying and, if the cover composition contains a vulcanizing or curing agent, to vulcanize or cure the cover.

An appreciable length of time elapses as the ball bodies roll down the several legs or sections of the trough and the convoluate increments of the cover material picked up at each revolution of the ball body are relatively thin so some evaporation, aided by the movement of the ball body, may take place. As a result the covering is more stable and less moisture is present to be dispersed into the ball body during the drying or curing in the mold than in prior practice.

The mold is preferably made by electroplating a leather covered hand sewn baseball. The electroplate is then removed and mounted in a solid backing matrix which is cored for heating by steam or other heating means. With a mold so prepared the thread, sew-holes and even the leather surface texture is imparted to the composition cover when the balls are removed from the molds. The reproduction of the stitching may, if desired, be painted or otherwise colored to give an exceedingly realistic appearance to the ball, the only indication, except upon critical inspection, that the ball is not provided with a sewn leather cover being the mold flash which can be removed by sanding. This close simulation in appearance to a standard leather covered ball is desirable in the eyes of juveniles, the principal users of this type of ball, who cannot afford the much more expensive leather covered professional or semi-professional baseballs.

While the ball body may take various forms, it is desirable that the outer portion of the body be formed of windings of textile strands, as previously mentioned, both for better ball performance and better adhesion of the cover. Preferably the outer windings are relatively fine to provide a smoother surface for the cover.

The covering compound may take various forms but preferably is a latex composition. The following covering compound has proved well adapted to application by the above method and apparatus.

A rubber latex, such as is obtainable under the designation "Lotol L–2632" (Naugatuck Chemical Company) with sulfur (Naugatuck Chemical Company's NX–811), cotton flock, casine and water in the following proportions forms a suitable composition:

	Parts by weight
Latex (Lotol L–2632)	222.7
Sulfur (NX–811)	1.60
Cotton flock	8.
Casein	5.0
Water	10.00
	247.30

The sulfur and cotton flock are first added to the latex and stirred until the air is sufficiently removed. The casein is then wet with the water but not heated. This is then added to the latex and stirred until the casein smooths out. The result is a viscous pasty material having the degree of tack, moisture content and viscosity suitable for covering baseballs in accordance with the present invention.

In practice baseballs covered with the above composition applied in accordance with the present invention have sustained at least 350 hits without deterioration and have otherwise demonstrated their superior qualities for the use intended.

What is claimed is:

1. The method of applying covers to baseballs and the like which comprises rotating the ball with a portion of its circumference in contact with a quantity of viscous covering composition, such as a rubber latex, to apply a circumferential band of the composition about an equatorial portion of the ball, and successively changing the axis of rotation of the ball to apply a succession of such bands thereto until the entire surface of the ball is covered with said composition.

2. The method of applying covers to baseballs and the like which comprises successively applying thereto circumferential bands of a viscous covering composition, such as a rubber latex, at varying equatorial angles to each other, said bands each comprising at least one complete convolute winding of the viscous composition, until the ball is at least completely covered.

3. The method of applying covers to baseballs and the like which comprises rolling the ball in a straight line with an equatorial portion of its surface in rolling contact with a quantity of a viscous covering composition, such as a rubber latex, to form a band of the composition circumferentially around the ball, the band being formed of at least one complete convolution of the composition picked up by the rolling advance of the ball, and successively changing the direction of advance of the ball to apply a succession of such bands until the ball is at least completely covered.

4. The method recited in claim 3 in which the coating composition comprises:

	Parts by weight
Latex (Lotol L–2632)	222.7
Sulfur (NX–811)	1.60
Cotton flock	8.
Casein	5.0
Water	10.00
	247.30

the sulfur and cotton flock being first added to the latex and stirred until the air is substantially removed, and the casein is wet with water and stirred into said latex-sulphur-flock mixture until the casein smooths out.

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