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METHOD OF COATING ARTICLES WITH PYROXYLIN OR THE LIKE

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This invention relates to the encaement or covering of articles with pyroxylin, celluloid or other nitrocellulose material and particularly the inlaying of the encaement surface of such coated articles with areas of material of distinctly different color or having other distinctly different characteristic and to the reinforcement of certain areas of the encaement by applying thereto preformed inlays or cover plates to be embedded in and integrally united with the coating or encaement material which is applied in liquid or semi-liquid form and cured in situ.

The invention is applicable to a wide range of articles such as toilet articles including brush and mirror backs, jewelry and other ornamental boxes and cases, ornamental panels, and plaques, articles of furniture, door knobs, handles, automobile accessories and game and sporting implements. For illustrative purposes, but with no intent to unnecessarily limit the scope and application of the invention, it is herein shown and described as applied to golf clubs whereby ornamental and decorative inlays are applied and balancing weights and face plates of distinctive character are incorporated and areas subject to excessive wear, particularly the sole of the club, is reinforced, all in such manner as to form a single unitary body having a continuous uninterrupted and impervious surface.

The present improvement is illustrated and hereafter described as applied to golf clubs of the driver, brassie, and spoon types, that is, so-called wooden clubs, although the heads of the clubs to be encaement may be of material other than wood. The covering or encaement of the golf club or other article is effected by dipping the article in a thick viscous solution of the nitrocellulose material and after draining the surplus material, curing and hardening the deposit under conditions of temperature and moisture control which will afford a hard, tough, durable surface covering which will be impervious to moisture and will possess a high degree of lustre or polish without the necessity of special finishing operation.

The method of applying the surface cover or encaement of nitrocellulose material or the like forms the subject matter of separate copending applications, Ser. No. 365,781, filed May 24, 1929 and Ser. No. 460,786, filed June 12, 1929, to which cross reference is made. Golf club shafts have herefore been coated or encaesed in pyroxylin or celluloid deposited in liquid form as is shown and described in copending application Ser. No. 385,115 filed Aug. 12, 1929 to which reference is also made.

The object of the invention is to provide a simple, cheap, and economical method of incorporating decorative or other inlays in the surface of pyroxylin or celluloid coated articles, and to enable the integral and unitary incorporation of reinforcement, protective, and other elements or portions of distinctive characteristics and the integral incorporation of balance weights and the like which by the encaement or coating applied in semi-liquid form and set and cured in situ are united into a homogeneous body.

In its application to golf clubs, the present invention provides for the coating and covering of the golf club head, which coating is preferably, though not necessarily, made a homogeneous continuation of the coating of the shaft.

A further object of the invention is to provide a covering or encaement for an article which will hermetically seal the article against entrance of moisture and which will afford a durable surface capable of lasting throughout the life of the article without the necessity of refinishing, and which will not readily show wear marks of usage.

A further object of the invention is to provide a bonding of the component parts of an article of sufficient thickness and strength to prevent loosening or displacement thereof such as striking face inserts, sole plates, back weights or inlays of golf clubs, which parts are subject to being loosened by shrinkage of the club head and by impact when in play.

A further object of the invention is to provide means whereby ornamental and decorative inlays may be applied and sole plates and balancing weights incorporated in such manner as to form a single unitary body.

A further object of the invention is to provide a continuous casing or covering over the head and shaft of the club without interruption, break, or overlap at the juncture of the club head and shaft.

A further object of the invention is to provide a reinforcement for the hosel of the club head and an effective joiner of the head and shaft, thereby eliminating the necessity for wrapping or "wopping" and further affording adequate protection to and sealing the joint between the shaft and head.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the features of construction, the parts and combination thereof and the mode of operation or their equivalents as hereinafter described and set forth in the claims.
Referring to the accompanying drawing, 1 is the head of a golf club which may be of wood, composition or other material, of which 2 is the hosel or neck and 3 the golf club shaft seated in a bore in the hosel 2 in the usual manner. This shaft 2 may be of wood, ordinarily hickory, or it may be a tubular metallic shaft such as are now commonly employed.

In preparing the golf club to be coated or encased by the present method, the face plate 4 preferably of celluloid or pyroxylin of consider- able thickness is secured to the face of the club head 1 by cementing or by other means. Insert studs 5 which may also be of celluloid or pyroxylin and are preferably of various colors differ-
ing from that of the face plate 4, are embedded in the striking face of the club head and project through such plate 4. By subjecting the face plate 4 and the insert studs 5 to a partial softening effect of a solvent material before being ap-
plied to the club head 1, the inserts 5 and face plate 4 will integrally unite with each other forming a union and will also adhere to the material of the head 1.

A sole plate 6 of similar material is applied to the bottom of the club head 1. The margin of this sole plate 6 is preferably skived or reduced in thickness as at 7 so that it will conform smoothly and merge into the surface of the club head 1. This sole plate 6 is also preferably sof-
tened by treatment with a solvent preparatory to its application to the club head so that it con-
forms exactly to the surface contour of the bottom of the club head and will adhere thereto.

It is customary to provide at the rear of the club head a balancing weight of different mate-
rial. In some cases it has been found that cellul-
oid or pyroxylin insert blocks or weights afford the necessary balance to the club head. Such insert block weight 8 is seated within a mortise
formed in the rear of the club head 1. The outer face of this balance weight or insert block 8 is contoured to agree with the surface contour of the club head, but is projected beyond the sur-
face of the club head a distance substantially equivalent to the thickness of the coating mate-
rial or encasing envelope to be applied. This in-
sert block or balance weight 8 is preferably ce-
mented or otherwise secured within the seat or mortise 9.

If it be desired to apply to the top of the club head an ornamental design or a marking panel of distinctive color, a cut-out 10 of sheet celluloid or pyroxylin of the desired color is cemented or otherwise secured to the top surface of the club head 1. This cut-out is of a thickness substanc-
ially equal to the thickness of the deposit of coating or encasing material to be applied to the club head. A convenient and simple method of attaching the several parts to the club head con-

sists in first dipping the club head in a solution of celluloid or pyroxylin which has been reduced to a viscous liquid by suitable solvent to form upon the club head the thin adhesive coating of such material which will form a union with the mate-
rial of the head 1 and to which the face plate 4, the sole plate 6, the balance weight 8 and orna-
tamental or marking panel 10 will integrally unite when softened with suitable solvent. These several parts having been secured to the head 1 either by directly cementing or uniting with a preliminary coating of similar material applied to the club head, such parts as are to be exposed to view after the coating or encasing operation and which are of distinctly different color from that of the coating material are painted or treated with material which will prevent the adhesion of the coating or encasing material thereto. It has been found that an application of ordinary glue or an application of liquid rub-
ber or rubber cement applied to the face of the face plate 6, the panel 10, or the weight 8, will enable the subsequently applied coating material to be stripped therefrom. That is to say, such glue or cement prevents the union and adher-
ence of the coating material to such parts.

By this prepared, the golf club is dipped into a viscous solution of the coating material. Any suitable solvent for pyroxylin or celluloid may be employed such as ether, alcohol, or ace-
tate, but the preferable solvent for this purpose is acetone. The viscous solution covers the entire club head and the shaft up to the grip portion. If desired, the shaft 3 may have been previously coated with such material prior to its attach-
ment to the club head 1. In such event, the solvent in the coating material softens the deposit upon the shaft sufficient to effect a union of the newly coated material with that previously applied to the shaft. Upon being removed from the dipping tank or receptacle, the surplus coating material is drained from the coated club, the latter being turned to and fro to distribute the remaining material uniformly and the club is then plunged into a setting and hardening bath which will congeal the deposited material. This bath is preferably, though not necessarily a non-
freezing material which has a great affinity for the solvent of the coating material and which is maintained at a very low temperature. Benzene or gasoline has been found to be quite suitable.

Such material possesses great affinity for the sol-
vent and tends to extract or absorb the solvent from the deposited coating material and being maintained at a very low temperature it causes the deposited material to chill or set. After rem-
oval from the setting bath, the coated club is cured in a room maintained at a sub-zero Fahrenheit temperature and in which moisture has been extracted from the air. This permits the solvent to evaporate slowly without causing wrinkles or pimpls or otherwise disturbing or dis-
torting the surface of the deposit. The evapor-
ation of the solvent has a refrigerating effect tending to lower the temperature of the surface of the coating material below that of the surrounding atmosphere. However, the moisture having been extracted from the atmosphere to such extent that condensation or frost deposit cannot occur, any tendency of the material to discolor, pit, or "blush" is avoided. This method of coating articles with pyroxylin, celluloid or the like forms no part per se of the present invention but is described and claimed in the copending application heretofore referred to.

If the initial deposit of coating or encasing 150
material is not of sufficient thickness, the dipping and curing operation is repeated until the deposit upon the surface of the club head 1 is equal in depth to that of the panel 10 and the extension of the weight 8 beyond the surface of the head 1. The deposited coating wholly encloses the sole plate 6 and also encloses the face plate 4. The solvent in the deposited material acting upon the margins of the face plate 4, softens the material of such face plate sufficiently to form a homogeneous union therewith. The striking face, however, of the plate 4 is protected by the glue, rubber or other stripping material will not unite with the overlying coating. However, the sole plate 6 not being so protected by stripping material will be sufficiently softened by the solvent in the viscous coating material in which the club is dipped to effect a perfect union therewith so that the sole plate 6 becomes an integral part of the casing or coating envelope. This deposit of coating material also unites with the marginal shoulders 11 of the balance weight 8, the face of which, however, is protected by the stripping material before referred to. After the dipping operation the club has somewhat the appearance shown in Fig. 4 in which the deposited coating material not only overlaps and encloses the sole plate 6 to which it is united, but also overlaps and encloses the face plate 4, the panel 10, and the balance weight 8. From these surfaces, however, material is easily stripped, leaving the face plate 4, the panel 10, and the balance weight 8 exposed. These parts being of distinctively different color from that of the deposited coating material, present a contrasting appearance.

The edge of the coating material adjacent to these exposed surfaces is trimmed smoothly and is preferably finished by grinding or polishing to present a uniformly smooth surface at the juncture of the insert and the deposited coating material. In the final form the club will appear as in Figs. 1 and 2 with the distinctively colored striking plate 4, the panel 10, and the balance weight 8 of distinctive color exposure to view and presenting a continuous uniform surface with that of the surrounding covered or covered area.

The encasement of the club head continues uninterruptedly up the handle shaft, which may be coated or encased in the same operation with the club head, or which may have been separately coated with the coating of which the encasing material of the head integrally unites.

While the invention has been illustrated and described in its application to golf clubs for which it is especially desirable, it is not limited to such application and effects may be applied to various articles, including handles and frames of tennis racquets, bowling pins, decorative automobile hardware as well as hardware for residences and numerous other uses.

From the above description it will be apparent that there is thus provided a method of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its steps, sequence, and detail procedure without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific details described, but that the means and method herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is, therefore, claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described my invention, I claim:

1. The herein described method of covering articles with pyroxylon or the like consisting in applying to the article a preformed body of pyroxylon which projects beyond the surface of the article, coating the article with liquid pyroxylon around such preformed body and causing the coating material to unite with the preformed body to form a homogenous encasement, and curing such coating material.

2. The herein described method of covering articles with pyroxylon or the like consisting in applying to the article a preformed body of pyroxylon which projects beyond the surface of the article, dipping the prepared article into liquid pyroxylon to cover the article outside the preformed body with the margin of which the liquid material unites, curing the coating material and subsequently removing the covering of pyroxylon from the face of the preformed body leaving the face of such body exposed to view.

3. The herein described method of covering articles with pyroxylon or the like consisting in applying to the article a preformed body of pyroxylon which projects beyond the surface of the article, treating the face of the preformed body to prevent adhesion of liquid pyroxylon thereto, leaving the margins thereof untreated, coating the article including such preformed body with liquid pyroxylon, curing the coating material, and stripping the pyroxylon coating from the face of said preformed body.

4. The herein described method of inlaying the surface of an article consisting in applying to the article a preformed body of pyroxylon or the like, coating the article with liquid pyroxylon of a distinctively different color, which liquid material will integrally unite with the margins of the preformed body, curing the coating material and removing material overlying the preformed body to expose the distinctively differently colored face of the body.

5. A golf club the head and shaft of which is encased in a continuous seamless integral covering of nitrocellulose material formed in situ thereabout.

6. A golf club, and an impervious seamless encasement of nitrocellulose material enclosing the golf club head and continuing uninterruptedly onto the shaft.

7. A golf club head, having a sole plate on the bottom of said head and an encasement of nitrocellulose material enclosing said head and sole plate.

8. A golf club head, a covering of pyroxylon applied to the bottom of the club head and an encasement of pyroxylon enclosing the club head and said bottom covering and integrally united therewith.

9. A golf club head, a face plate in the striking face thereof, and an encasement of pyroxylon or the like enclosing the club head and integrally united with said face plate at the margins thereof, leaving said face plate exposed.

10. A balanced golf club head, and an encasement of pyroxylon or the like enclosing the club head and integrally united with the balancing body at the margins thereof leaving the face of said balancing body exposed.

11. A golf club head including a panel of nitrocellulose material applied to the surface of the
club head and an encasement of like material enclosing the club head and integrally united with the margins of said panel leaving such panel exposed.

12. An article encased in pyroxylin or the like comprising a core, a preformed inlay body of pyroxylin or the like applied to the surface of said core, and an encasement of pyroxylin of distinctively different color formed in situ about said core and integrally united with the margins of said inlay body and having its surface substantially flush with that of the latter.

13. An article of manufacture encased in pyroxylin comprising a core, a reinforcement plate applied to the surface of said core body and an encasement of pyroxylin formed in situ about said core and enclosing said reinforcement plate.

14. An article of manufacture encased in pyroxylin comprising a core having a recessed seat formed therein, a preformed body of pyroxylin seated in said recessed seat and projecting a limited distance beyond the surface of the core, and an encasement of pyroxylin of distinctively different color formed in situ about said core and integrally united with the margins of the projecting portion of the preformed body and having its surface substantially flush with that of the latter.

15. An article of manufacture encased in pyroxylin comprising a core, a preformed body of pyroxylin fixedly attached to the core and an encasement of pyroxylin formed in situ about the core and integrally united with the margins of the preformed body to form a continuous enclosure for the core in the surface of which the face of the preformed body is visible.

16. The herein described method of forming articles, consisting in forming the article to be encased, attaching to the surface thereof a decorative panel, treating the face of the panel to prevent adherence of an encasing material and applying to the article a fluid body of encasing material having the capability of integrally uniting with the margins of the panel, leaving the face thereof exposed.

17. An article of manufacture comprising an article to be encased, a preformed body attached thereto and an encasement formed in situ about said article and integrally united with the preformed body to form a continuous uninterrupted enclosure for the article.

18. As an article of manufacture, an article to be encased, a reinforcement plate attached to the surface of the article, and an encasement formed in situ about the article enclosing and integrally united with said reinforcement plate.

19. A golf club comprising a core and a continuous homogeneous seamless encasement of nitrocellulose material formed in situ thereabout.

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