W. W. VINCENT.

PROCESS OF LACQUERING BEDSTEADS.

APPLICATION FILED MAY 22, 1908.

908,911. Patented Jan. 5, 1909.

Fig. 1.

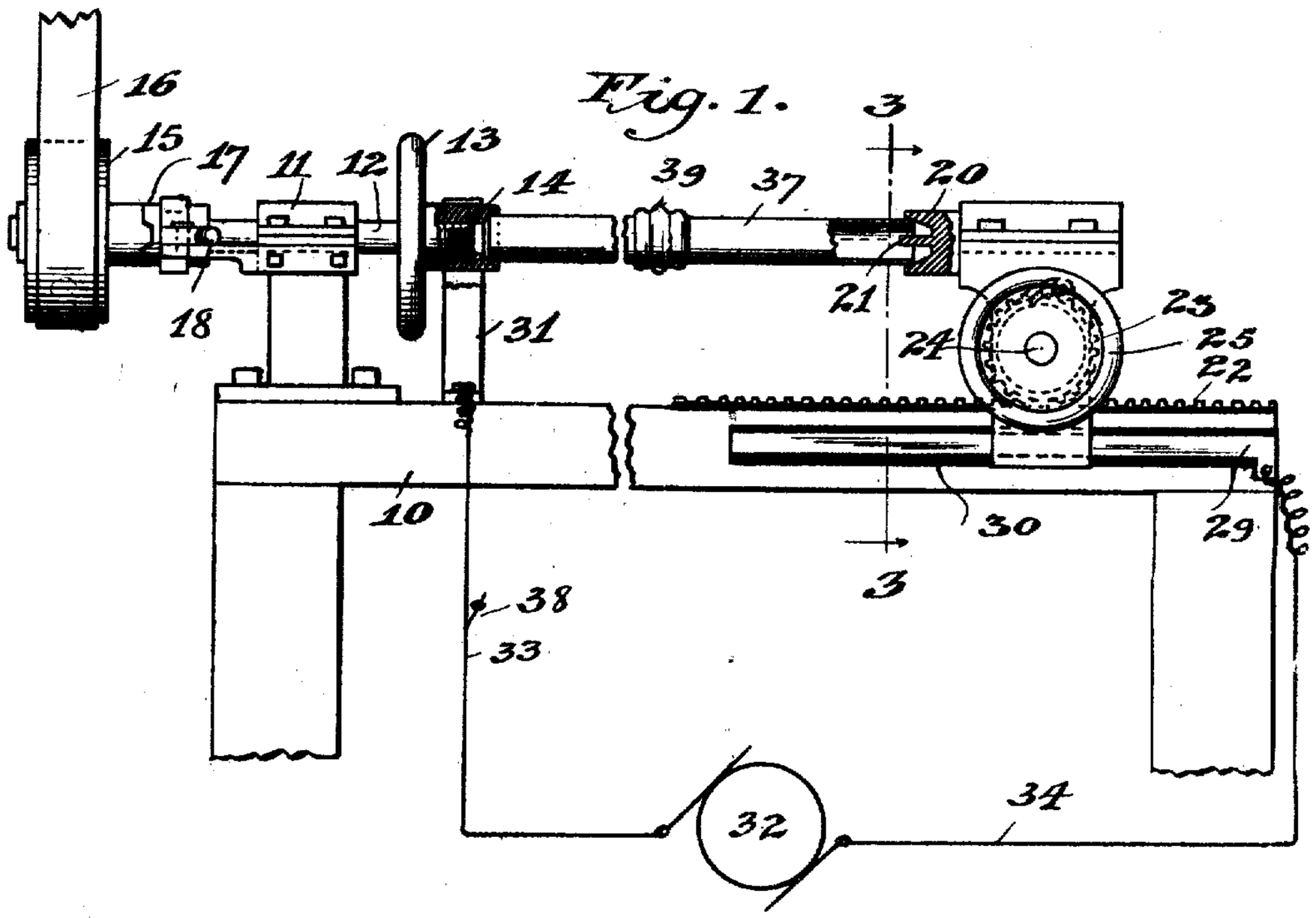


Fig. 2.

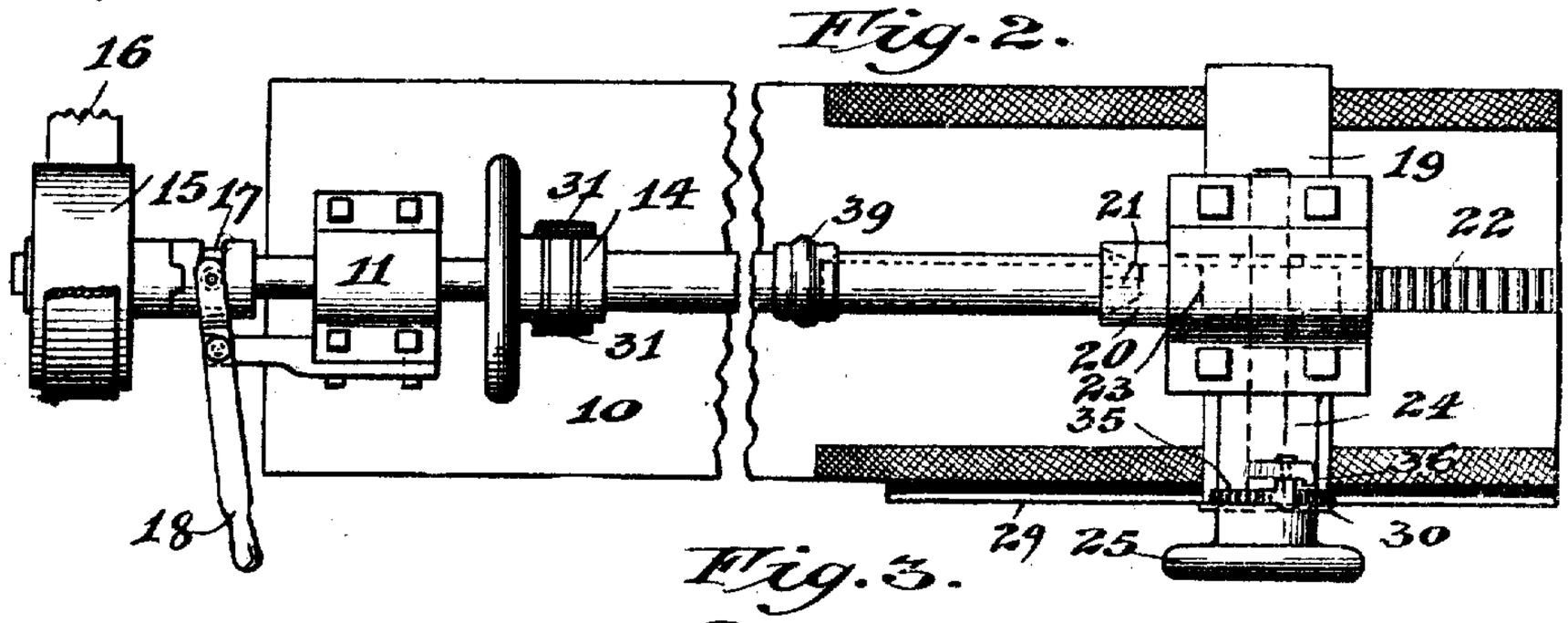
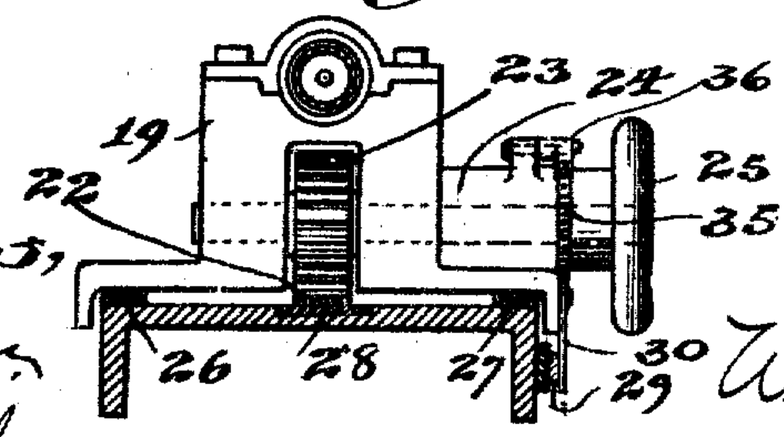


Fig. 3.



Witnesses,
F. S. Mann,
Walter M. Fuller

Inventor,
William W. Vincent
By Offield Towle & Linthicum
Att'ys.

UNITED STATES PATENT OFFICE.

WILLIAM W. VINCENT, OF KENOSHA, WISCONSIN.

PROCESS OF LACQUERING BEDSTEADS.

No. 908,911. Specification of Letters Patent. Patented Jan. 5, 1909.

Application filed May 22, 1908. Serial No. 434,362.

To all whom it may concern:

Be it known that I, WILLIAM W. VINCENT, a citizen of the United States, residing at Kenosha, in the county of Kenosha and State of Wisconsin, did invent certain new and useful Improvements in Processes of Lacquering Bedsteads, of which the following is a specification.

Heretofore it has been usual and customary to lacquer brass bedsteads by the employment and use of what is known as American lacquer. Such lacquer is applied cold to the burnished metal with a brush, and but a single coat can be used because a second overlying or intended superposed coat cuts and softens the first, whereby the latter is wiped off by the brush and but a single coat or layer remains. This lacquer, which is of cream or honey consistency, is composed principally of gun cotton, amylacetate, and fusel oil, but contains also shellac and other gums. Although this American lacquer before it is applied is comparatively thick, as indicated above, yet, when it has dried on the metal, the protective coating which it leaves is very thin and is not durable, hard, or lasting. Merely the daily contact of the bed clothing with these lacquered rods or posts, as when the clothes are thrown over the foot of the bed, soon wears the lacquer off, and, unless the relacquering is done at once, the brass tarnishes, causing the most conspicuous part of the bedstead to become the most unsightly. Not infrequently the moisture of the air will detrimentally affect this protective veneer, causing it to peel off. Under ordinary circumstances, bedsteads coated with this American lacquer will in from one to three years require taking apart, crating, and shipping to some place where they may be repolished and relacquered, at an expense of from $3.00 to $12.00 per bed, only to require relacquering again at the expiration of another like period of time. It is almost needless to mention what is apparent, namely, that during such handling of the bedstead in crating, carting, etc., there is considerable danger of denting or marring the parts thereof, requiring additional expense in removing or attempting to efface the same. Another disadvantage is that the quality of American lacquer is quite variable and unreliable, its inferior characteristics generally only becoming apparent after the bedstead has been sold and used. As stated above, this is the lacquer that has been in general use on bedsteads of the character indicated, and, were it possible to apply a number of overlying or superposed coats of the same, the finished bedstead would still be objectionable, because such lacquer does not possess the necessary hardness and wearing qualities to successfully and satisfactorily withstand repeated handling of the bedstead and the friction due to drawing or dragging the bed clothes over the same. This American lacquer is especially unadapted for use on brass bedsteads with a satin or dull finish produced by supplying the surface thereof with a multitude of small scratches, thereby providing many slight elevations and depressions. Such a thin coat of lacquer would fill the small depressions or recesses, but would barely cover the higher parts.

It has been understood for some time that what is known as English lacquer, which is made of a harder gum (shellac) and pure grain alcohol, will stand the wear to which a lacquered bedstead is subjected, but, owing to the fact that the laquer is thinner (the alcohol being incapable of dissolving more than a limited amount of shellac) than the American lacquer, and a single coat or layer is quite thin, it is necessary to apply several coats. This English lacquer, however, has heretofore been used only to a comparatively slight extent, due to the practically prohibitive expense of applying the necessary number of coats. Could these coats or layers be brushed on cold, one on top of the other, the difficulty would be easily solved, but in order not to permit the alcohol of one coat as it is applied to cut and soften the gum of the underlying coat or coats, the alcohol must be evaporated instantly and immediately, otherwise the softened under or lower layers are wiped off by the brush applying the later or outer coat. In carrying out this process so as to quickly evaporate the alcohol and build up a transparent veneer of sufficient and adequate thickness, it has been usual to heat each brass tube in an oven, remove it hastily, apply or brush on a coat of lacquer with great rapidity, and then return the tube to the oven for another heating of from ten to thirty minutes before the next coat could be applied. The tubes used in brass bedsteads are quite

thin and have large radiating surfaces relative to their volumes, so that they can retain but comparatively little heat and cool rapidly. As will be readily understood, the tube is heated so as to quickly drive off or evaporate the alcohol of the lacquer before it can act on the other coats of gum veneer, and the alcohol on the other hand through its rapid volatilization quickly cools the heated tube to a temperature at which it is impossible to proceed with the coating without cutting or wiping off the under layers. Consequently, the workmen must act very rapidly, with the resulting likelihood of doing defective and imperfect work. As far as this process has been used it has been customary to apply from three to six coats of lacquer with the corresponding number of reheatings of from ten to thirty minutes each. Obviously, it required ordinarily from one hour to an hour and a half to finish a tube, depending, of course, on the size of tube and number and periods of heatings. It should be noted that large ovens are required, that the work tables must be placed close to the ovens so that little heat will be lost during the transportation of the tube to the table, that the tube has to be heated hotter (340–350 degrees Fahrenheit) than is really necessary to quickly evaporate the alcohol in order that the workman may cover it with one coat before its temperature has decreased sufficiently to prevent further coating without reheating, that owing to such overheating the color of the lacquer is considerably and detrimentally darkened, that great care needs to be exercised to have all parts of the bedstead of the same or even color, that experienced and very careful workmen only can be used for such work, that if a tube accidentally comes in contact with a portion of the oven a disfiguring brown spot is caused, that the temperature of the oven must be carefully regulated otherwise the lacquer is burned and darkened, that each tube must stay in the oven a given period and no longer otherwise the lacquer is injuriously affected and a single tube may display several colors of lacquer, that great care needs to be taken in handling the tubes so as not to damage them or their lacquers, and that in a large plant much floor space is needed to accommodate the numerous ovens and work tables. From the above the reason why this process has been but comparatively little used, even though the finished product is in demand, is made apparent. To overcome the defects of this process, to reduce the cost of using English lacquer, and generally to improve the method of applying the same, I have invented a process by the employment of which a brass tube may be provided with lacquer of several coats thickness in less than a minute in contrast to the many minutes or hour or more required by the old process, by the use of which only one-fifth of the usual floor space is required, and by the adoption of which a remarkable saving in the cost of coating or lacquering bedsteads is attained.

My invention contemplates the heating of a brass tube or other buffed or burnished metallic piece during the application of the lacquer, the lacquering being a continuous process, and there being no cooling or reheating of the tube. In other words, the cooling action of the alcohol is neutralized and counteracted by applying heat to the tube during the coating operation. Preferably the tube is heated by passing a current of electricity directly therethrough, the latter being of such strength as to maintain the heat or temperature of the tube substantially constant in opposition to the cooling action of the evaporating alcohol. Desirably the tube or other piece is rotatably mounted during the heating thereof, so that the operator can brush on the lacquer as the tube is turned until the successive coats are of the desired or sufficient thickness. When my method or process is employed the tube need not ordinarily be heated above 212 to 240 degrees Fahrenheit, so that no heat is wasted as by the oven reheating method, nor is the color of the lacquer changed by the heat as by the other process which makes the lacquer look thicker than it really is. By my improved scheme the operator places the buffed brass tube or tube with satin finish in the lathe-like appliance by means of which my new process may be conveniently carried out, brings the same into firm contact with the electrodes, turns on the current of electricity, wipes the tube free from dust during its rise in temperature, turns the tube either by hand or power while brushing on the several coats of lacquer, removes the tube and places it in a suitable rack, the whole lacquering process requiring from forty-five seconds to two minutes. The heat is applied at substantially the same rate as the tendency of the tube to cool, and the electric current may be controlled either by a rheostat or by opening and closing a controlling switch. By using my improved process all unnecessary handling of the tube is avoided, the liklihood of the occurrence of poor workmanship is greatly reduced because it is not necessary to apply the lacquer as rapidly as by the old process, there is an entire avoidance of unnatural discoloration of the lacquer, and an avoidance of varying colors of different parts of the same bed finished by the same or different workmen, a minimum amount of floor space is used, the lacquer is smoother than that produced by the old method, there is practically no likelihood of damaging the tube while being coated, the lacquering is even over the entire tube, and the reduction in cost is great, bringing the use of the hard, durable English lacquer within the means of

all who heretofore have had to be satisfied with the inferior, unsatisfactory and unreliable American lacquer.

On the accompanying drawings I have illustrated a desirable form of machine which may be employed in carrying out my improved process.

On these drawings,—Figure 1 is a fragmentary elevation partly in section of a lathe-like structure suitable for use in carrying out my improved lacquering process; Fig. 2 is a plan view of the structure shown in Fig. 1; and Fig. 3 is a vertical cross-section on line 3—3 of Fig. 1, as viewed in the direction indicated by the arrows.

On a suitable bed or base 10 is mounted a head bearing 11, rotatable in which is a shaft 12 having secured to its inner end a manually-operative handle or wheel 13 and a tube-holding sleeve or head 14. A driving pulley 15 connected to any suitable source of power by a belt 16 is mounted on the outer end of the shaft 12, to which it may be coupled and from which it may be uncoupled by means of a clutch 17 supplied with an operating-handle 18. On the elongated bed or base 10 I also mount a movable tail stock 19, in the upper portion of which and in alinement with the axis of shaft 12 is secured a tube-supporting member 20 having a conical tube-receiving mouth, as does the sleeve 14, and a centrally-disposed pin or projection 21 upon which the tube is adapted to drop and be supported when the tail stock is moved rearwardly to a slight extent. A rack 22 is supplied on the upper surface of the bed or base 10, and coöperating with the teeth of this rack is a gear 23 mounted internally of the tail stock 19 on the inner end of a transverse shaft 24, whose outer end is provided with an operating wheel or handle 25. As is obvious, by rotating shaft 24 and gear 23 by means of handle 25 the tail stock and the tube-support 20 may be made to travel longitudinally of the base of the machine, permitting the insertion or withdrawal of a tube between the members 14 and 20.

The tail stock 19 is insulated from the metallic bed 10 by strips of insulation 26 and 27 while the rack 22 is similarly insulated by the body of insulation 28. On one face of the bed 10 I provide a copper strip or electrical conductor 29 suitably insulated from the base or bed, and coöperating with which and adapted to slide on its surface is a metallic brush 30 of the usual construction, electrically connected to the tail stock 19. Brushes 31 mounted on the machine contact with the sleeve or tube holding member 14 and make electrical connection therewith. Any suitable source of electric current either direct or alternating 32 is connected by the conductors 33 and 34 to the electrodes 31 and 30, respectively. It will be obvious, therefore, that if a conducting connection is made between the parts 14 and 20 the electrical current from the generator will pass through and heat the same. In order that the tail stock may be prevented from moving away from the head stock of the machine, I provide a ratchet 35 on the shaft 24 or hand 25, cooperating with which is a manually-actuated pawl 36 mounted on the tail stock.

My improved process is carried out substantially as follows: The brass tube 37 to be coated or lacquered is placed between the electrode supports 14 and 20, and by turning the handle 25 the support 20 is moved toward the head stock so that the tube is firmly held between the two parts. During this inward traveling of the tail stock, the pawl 36 riding on the teeth of the ratchet prevents backward turning of the same. A switch 38 in the electrical circuit is then closed so that the current of electricity passes through the brass tube. During this rise in temperature under the influence of this current, the operator wipes the tube free from dust, the tube reaching the proper temperature in a very few seconds. The cylindrical heated portions of the tube are then coated with the lacquer by drawing the brush lengthwise the tube and turning the latter manually by the handle 13, this operation being continued until a sufficient number of overlying coats or layers have been applied to provide a protective veneer of the desired thickness. As has been indicated above, during this application of the lacquer the tendency of the tube to cool rapidly, due to its large radiating surface and to the evaporation of the alcohol, is counteracted by the steady and constant application of heat thereto by the electricity passed directly therethrough. This current of electricity is so regulated by the operator that the temperature of the tube remains substantially constant and unvarying during the application of the lacquer. In order to coat portions of irregular shape, such as the enlargement or boss 39, the operator throws the clutch handle 18 so that the shaft and tube will be rotated by power derived through the belt 16, the brushing then being done transversely to the axis of the tube so that the lacquer may be applied more evenly. When the coating operation has been completed, the operator opens the switch 38, releases the pawl 36 from the ratchet, and turns the handle 25 so as to move the tail stock outwardly sufficiently to free the tube, whereupon the same is readily taken from the machine and permitted to cool.

Although I have shown one form of device which is adapted for use in connection with the employment of my improved method of lacquering, it is to be understood that the process is in no wise limited to this particular form or style of mechanism.

Whereas I have described this invention in relation to the use of lacquer, it is to be

understood that the same process may be advantageously employed in connection with various other kinds of coating materials.

I claim:

1. The method of lacquering a tarnishable metal piece which consists in heating said piece by generating the heat in the metal of which said piece is composed, applying thereto while thus heated overlying or superposed coats of lacquer with said piece exposed to permit evaporation of the volatile constituent of the lacquer, maintaining the temperature of said piece during such coating operation at a sufficient degree to evaporate the volatile constituent of the lacquer as it is applied, thereby preventing the cutting or softening of the underlying coat or coats, but not at a high enough degree to injure the lacquer, and permitting said piece to cool, substantially as described.

2. The method of lacquering a tarnishable metal piece which consists in heating said piece by means of electricity, applying thereto while thus heated overlying or superposed coats of lacquer with said piece exposed to permit evaporation of the volatile constituent of the lacquer, maintaining the temperature of said piece during such coating operation at a sufficient degree to evaporate the volatile constituent of the lacquer as it is applied, thereby preventing the cutting or softening of the underlying coat or coats, but not at a high enough degree to injure the lacquer, and permitting said piece to cool, substantially as described.

3. The method of lacquering a tarnishable metal piece which consists in passing a current of electricity through said piece to heat the same, applying thereto while thus heated overlying or superposed coats of lacquer with said piece exposed to permit evaporation of the volatile constituent of the lacquer, maintaining the temperature of said piece during such coating operation at a sufficient degree to evaporate the volatile constituent of the lacquer as it is applied, thereby preventing the cutting or softening of the underlying coat or coats, but not at a high enough degree to injure the lacquer, and permitting said piece to cool, substantially as described.

4. The method of lacquering a tarnishable metal piece which consists in passing a current of electricity through said piece to heat the same, rotating said piece, applying thereto while thus heated and during its rotation overlying or superposed coats of lacquer with said piece exposed to permit evaporation of the volatile constituent of the lacquer, maintaining the temperature of said piece during such coating operation at a sufficient degree to evaporate the volatile constituent of the lacquer as it is applied, thereby preventing the cutting or softening of the underlying coat or coats, but not at a high enough degree to injure the lacquer, and permitting said piece to cool, substantially as described.

5. The method of coating a tarnishable metal piece which consists in heating said piece by generating the heat in the metal of which said piece is composed, applying thereto while thus heated overlying or superposed coats of protective material with said piece exposed to permit evaporation of the volatile constituent of said material, maintaining the temperature of said piece during such coating operation at a sufficient degree to evaporate the volatile constituent of the coating material as it is applied, thereby preventing the cutting or softening of the underlying coat or coats, but not at a high enough degree to injure the coating, and permitting said piece to cool, substantially as described.

6. The method of lacquering a tarnishable metal piece which consists in heating said piece by electricity and applying thereto while thus heated a coating of lacquer, said piece during the application of said coating being exposed to permit evaporation of the volatile constituent of the lacquer, substantially as described.

WILLIAM W. VINCENT.

Witnesses:

GUS JACOB,

J. H. CANTWELL, JR.