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METHOD OF COATING HEELS.

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The invention is a novel method of coating heels by the dipping process, and the principal object thereof is to provide a novel, simple and efficient commercial method for dipping wooden, leather or fibre heels into vats containing celluloid coating materials, or lacquers of cellulose or other material of similar properties (such as "Duco"), whereby a uniform smooth celluloid finish is given thereto in various colors.

Heretofore heels have been covered with sheets of celluloid and the like, but the dipping method or process for coating same has been heretofore unsuccessfully attempted, because the necessary time element for such dipping was not appreciated, and consequently bubbles of air or moisture would form or rise upon the surfaces of such dipped heels, rendering the same unsightly in appearance, and hence commercially useless. But by using our novel dipping method the coating may be applied smoothly and free from such defects, and the heels may be readily manufactured commercially in large numbers.

Furthermore, it is well known that in dipping processes, as the articles are withdrawn from the solution in the vat, ridges of coating material will be formed around the lower ends of such articles, which ridges being thicker than the normal coatings detract from the appearance of the article, and render the heels so dipped commercially useless. Our dipping method however not only eliminates such ridges from the finished heels, but overcomes the formation of the above-mentioned air or moisture bubbles upon the surfaces of the coated heels.

We will explain the invention in order to enable others familiar with the art to adopt and use the same, and will summarize in the claims the essential features of the invention for which protection is desired.

In our novel process or method, a dipping machine of well known type is utilized, said machine being provided with an elevator carrying a rack containing a plurality of work holders, and means being provided for lowering the elevator to dip the heels on the work holders into the coating solution contained in the vat, and for raising the elevator through suitable speed reducing mechanism, to withdraw the coated heels from the vat at a very low speed thereby permitting the celluloid coating to obtain an initial "set" or hardness, while and as the heels are withdrawn from the solution. Such machines, however, are well known, and need no particular description herein, and form no part of our present invention.

The heels, which may be either of wood, leather, fibre or any other like material particularly wooden heels are first given a smooth finish, and then thoroughly dried in suitable drying kilns to absorb as much moisture and air therefrom as possible. We have found, however, it is impossible to absorb all the air and moisture from the heels, since the normal atmosphere contains moisture which collects in the cells of the wood or the like after the heels have been removed from the kilns.

The previously dried heels are then mounted on the work holders of the rack, and the elevator carrying the heels is then lowered into the vat containing the celluloid coating material, such as lacquer of cellulose, or other material of similar properties, or such material may be a commercial product "Duco", obtained on the market. The heels are then left immersed in the coating solution for an initial period of approximately three minutes, during which time the ether in the solution penetrates into the body pores of the heel driving out all the air and moisture therein, which may be seen rising as bubbles to the surface of the solution, adjacent the heels, during the initial period of immersion. When such bubbles cease rising the motor or other device for raising the elevator is set in motion and the heels are slowly withdrawn from the solution, the celluloid obtaining an initial "set" or hardness while and as the heels are so withdrawn. Our particular process requires approximately seven minutes for withdrawing the heels from the solution. Repeated experiments have shown that the time element is the essential and important factor or feature in the above dipping method, for where the heels are slowly withdrawn by the elevator from the solution immediately after immersion without first permitting same to stand for the initial period of approximately three minutes, air and moisture bubbles will nevertheless form on the surfaces of the heels during the first coating rendering same commercially useless. The heels, however,

dipped by our method above described are entirely free from such bubbles and the heels emerge therefrom with a uniform, smooth coating having an initial "set".

The rack is then removed from the elevator, and the first coating on the heels permitted to harden more thoroughly. The heels are then redipped in the same solution. The duration of the redipping depends upon the hardness or dryness of the first coating. If the heels have hardened overnight and are hence substantially thoroughly dry, the heels, on the same rack, should be dipped and immediately withdrawn at a uniform speed over a period of approximately 20 seconds. If, however, the second coating is applied the same day as the first coating, the heels should be permitted to stand in the solution for an initial period of approximately one and one-half minutes before withdrawal, and then withdrawn slowly as in the first coating step, whereupon the heels emerge with a uniform coating, which is somewhat thicker and smoother than the first coating.

The heels are then again permitted to dry and thoroughly harden for a sufficient length of time, and the third dipping then effected. In this step the heels are merely dipped in the solution and withdrawn quickly, and then permitted to harden. This completes the coating operation, and repeated experiments have shown that such method produces a superior product, and that the heels have a hard, glossy, glass-like surface, free from pits or bubbles. The coating, when struck with a hammer or the like does not peel, crack, chip, or flake even when the wood itself is dented, and hence the coating is extremely durable, waterproof, and may be of any desired color.

The heels before coating must be given a smooth finish, and also the upper ends thereof should not be gouged out to form the heel seats before the coating; moreover the heels before coating should be made slightly longer than the length of the finished heel for the following reasons. The heel seat ends of the heels, before gouging are connected with the work holders of the racks, said work holders being preferably like those shown in the application of Stanley J. Beebe, Serial No. 89,210, filed Feb. 18, 1926, which work holders hold the heels with their upper surfaces parallel with the surface of the solution in the vat, so that when the heels are lowered until their upper surfaces are level with the coating solution their upper faces will not be coated. As previously stated, the blank heels are made slightly longer than the desired length of the finished heels so that the lower end of the heel upon which the ridge of celluloid collects may be cut off or graded above the ridge, and a tread lift of leather or rubber applied thereto in the usual manner. After the heels are coated and graded, the same may be run through a gouging machine to gouge out the heel seat.

Our novel method of coating heels is simple, efficient, commercial, and produces a superior product by the dipping process. The celluloid coating will not peel, flake, chip, or crack, and is extremely durable, smooth, glossy, and waterproof. Repeated experiments have shown that the time element is an important factor in the dipping method, due to the air and moisture contained in the pores of the heels.

What we claim:

1. The herein described method of coating heel blanks with lacquer of cellulose, consisting in immersing the blanks in the lacquer; maintaining the blanks immersed for a period sufficient to drive off the air and moisture therefrom; then withdrawing the blanks from the lacquer at a uniform speed sufficiently slow to permit the coating to initially "set" during such withdrawal.

2. In a method as set forth in claim 1, the heel blanks being longer than the desired length of the finished heels; and cutting off the lower ends of the blanks above the ridge of lacquer after the coating operation.

3. The herein described method of coating heel blanks with lacquer of cellulose, consisting in immersing the blanks in the lacquer until their upper surfaces are flush with the surface of the lacquer; maintaining the blanks immersed for a period sufficient to drive off the air and moisture therefrom; then withdrawing the blanks from the lacquer at a uniform speed sufficiently slow to permit the coating to initially "set" during such withdrawal.

4. In a method as set forth in claim 3, the blanks being longer than the desired length of the finished heels; and cutting off the lower ends of the blanks above the ridge of lacquer after the coating operation.

5. The herein described method of coating heel blanks with lacquer of cellulose, consisting in immersing the blanks, before gouging the heel seats, in the lacquer, until their upper surfaces are flush with the surface of the lacquer; maintaining the blanks so immersed for a period sufficient to drive off the air and moisture therefrom; then withdrawing the blanks from the lacquer at a uniform speed sufficiently slow to permit the coating to initially "set" during such withdrawal; and then re-immersing the heels.

6. In a method as set forth in claim 5, the blanks being longer than the desired length of the finished heels; cutting off the lower ends of the blanks, above the ridge of lacquer, after the coating operation; and finally gouging the heel seats.

7. The herein described method of coat-

ing heels, consisting in immersing the heels in the coating material; maintaining the heels immersed for a period sufficient to drive off the air and moisture therefrom; then withdrawing the heels from the coating material at a uniform speed sufficiently slow to permit the coating to initially "set" during such withdrawal.

8. In a method as set forth in claim 7, the heels being longer than the desired length of the finished heels; and cutting off the lower ends of the heels above the ridge of coating material after the coating operation.

9. The herein described method of coating heels consisting in immersing the heels in the coating material until their upper surfaces are flush with the surface thereof; maintaining the heels immersed for a period sufficient to drive off the air and moisture therefrom; then withdrawing the heels from the coating material at a uniform speed sufficiently slow to permit the coating to initially "set" during such withdrawal.

10. In a method as set forth in claim 9, the heels being longer than the desired length of the finished heels; and cutting off the lower ends of the heels above the ridge of coating material after the coating operation.

11. In a method as set forth in claim 9, the heels being longer than the desired length of the finished heels; cutting off the lower ends of the heels above the ridge of coating material after the coating operation; and finally gouging the heel seats.

In testimony that we claim the foregoing as our own, we affix our signatures.

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