

UNITED STATES PATENT OFFICE

EMIL PFIFFNER, OF FRIBOURG, SWITZERLAND, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO RADIO PATENTS CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW
YORK

METHOD OF APPLYING A FIRMLY-ADHERING METAL COAT TO INSULATING PLATES,
PARTICULARLY FOR USE IN ELECTRIC CONDENSERS

No Drawing. Application filed November 11, 1926, Serial No. 147,846, and in Germany November 12, 1925.

This invention relates to methods of applying a firmly adhering metal coat to insulating plates, particularly for use in electric condensers.

5 Insulating plates or insulating foils or sheets of acetyl-cellulose are particularly well adapted for the construction of electric condensers especially in view of the great dielectric firmness or strength of this material.
10 However this great dielectric firmness or strength can be taken advantage of to the full extent only in case an intimate contact is established between the insulating material and the metal coat, so that gaps, filled with air or
15 gas, cannot be formed between the said material and coat, and discharges cannot take place within the said gaps.

It is already known to superficially saponify a film of this material before the chemical precipitation of the metal by means of acids or alkalis. From this, the method according to the present invention differs in that, by employing metallic salt solutions containing an excessive amount of an acid
25 and alkali, the superficial saponification of the ether or ester is carried out by the reducing action of the freed cellulose which causes a colloidal separation of metal and metal-oxide respectively. Thereby a connection
30 takes place between the cellulose and the metal or metallic oxid, and according to the density of the precipitation the coloration ranges from light yellow over brown to black.

The firmly adhering intermediate layer
35 constitutes the support for the application of the metal coat which by the addition of a reducing agent is applied in a chemical or electrolytic manner, according to known methods. A superficial saponification of the cellulose-compounds, such as cellulose-ethers or
40 esters, is a fundamental necessity for securing the metal-coat. The insulating material is detrimentally affected when using alkalis or acids alone. Therefore according to the
45 present invention the saponification is carried out in the presence of metallic salts, whereby the insulating material is effected in soft manner in that owing to the simultaneous separation of the metal or metallic

oxide the cellulose is protected against severe attacks by the alkalis or acids.

The metallic salt solutions which superficially saponify the cellulose, can be any solution containing an excess of alkali, as for instance potassium-, sodium-, or ammonium hydroxide; or on the other hand a solution containing an excess of acid, such as for instance sulphuric acid, would be suitable.

In the preferred form of the invention the metallic salt solution used is an ammoniacal solution of silver nitrate.

According to the present invention the same metallic salt solution can be employed for producing the intermediate layer and the
65 conducting metal-coat.

I claim:

1. In the process of applying a metallic coating to a sheet of a cellulose ester wherein the sheet is superficially saponified to liberate free cellulose by the action of an acid or an alkali saponifying solution, the method of forming a firmly adhering initial coating on said sheet which comprises treating the sheet with a saponifying solution containing a metallic salt reactive with free cellulose to precipitate a metallic reduction product whereby the cellulose ester sheet is superficially saponified and an initial metallic
70 production product is simultaneously precipitated on said sheet.

2. In the process of applying a metallic coating to a sheet of a cellulose ester, the method of forming a firmly adhering initial coating on said sheet which comprises treating the sheet with an ammoniacal solution of silver nitrate.

In testimony whereof I affix my signature.
EMIL PFIFFNER.

90

95

100