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CRINKLED COATED SURFACE

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1 Claim. (Cl. 91—70)

This invention relates to crinkled coated surfaces, and more particularly to a method of varying the character of the crinkling.

Crinkled surfaces may be produced on fabric, wood, metal, paper and similar semi-porous or non-porous materials by applying thereto a mixture of suitably treated oils. The coating has a smooth paint-like surface when first applied, and transforms upon drying into a crinkled but unbroken surface of fairly definite design. The drying of the surface coating may be expedited by the application of heat.

The coating mixture usually consists of a mixture of separately and differently heat treated oils, as for example, China wood oil and soya bean oil, together with fillers and coloring pigments as desired. Due to the difference in the treatment and also to the difference in the character of the several constituent oils, part of the coating dries more rapidly than the remainder and causes the formation of spaced ridges in the surface thereof. The character or appearance of the surface varies according to the size and spacing of the ridges. Thus when the ridges are quite heavy and spaced apart, the effect obtained is that of a heavy or accentuated crinkle, while the formation of fine, closely spaced ridges produces a light crinkle and gives the surface a less corrugated appearance. I have discovered that the size and spacing of the ridges and consequently the character of the crinkled surface is influenced by the temperature to which the material is subjected immediately after the application of the coating.

The complete drying of the coating requires a measurable period of time, even when the drying is effected at elevated temperatures. According to my discovery, the drying period may be divided into two stages. In the first stage, which is of relatively short duration, the spaced ridges, constituting the crinkled surface, are formed, and in the second stage the entire coating is dried throughout and the crinkle is permanently set. The first stage may be designated as the crinkle-forming stage, and the temperature to which the material is subjected during this stage as the crinkle-forming temperature. The second stage is the final drying stage and the temperature during this stage is the final drying temperature.

The present invention then consists in regulating the character of the crinkled surface by regulating the crinkle-forming temperature, the size and spacing of the ridges which constitute the crinkled surface varying in inverse relation to the crinkle-forming temperature. Thus, a heavy or accentuated crinkle consisting of heavy, widely spaced, ridges is obtained when the crinkle-forming temperature is relatively low, while a light crinkle of fine, closely spaced ridges, results when the crinkle-forming temperature is relatively high. Between the two extremes of heavy crinkle and light crinkle, a variety of intermediate degrees of crinkling may be produced by varying the crinkle-forming temperature accordingly.

This rule of operation is generally applicable to controlling the character of the crinkling in crinkled coated surfaces with respect to the size and spacing of the ridges.

The following examples illustrate the results obtainable with my invention:

A coating mixture was prepared by subjecting separate portions of China wood oil to heat treatment under differing conditions of temperature and time of treatment. After the treatment the separate portions were combined and mixed with fillers and coloring pigments in the usual manner. Portions of the coating mixture thus prepared were then applied to a semi-porous fabric of the oilcloth type under the following conditions:

After coating the first portion of the mixture upon the fabric, the material was subjected to a crinkle-forming temperature of 110° F. for approximately one-half hour. At the end of the half-hour period, the coating, which was smooth when first applied, had transformed into a crinkled surface having heavy, widely spaced, ridges. The temperature was then raised to about 200° F. and maintained at that value for about six hours, in which time the surface coating was dried completely and the crinkle was of the heavy, accentuated type.

A second portion of the coating mixture was applied to a piece of fabric similar to that coated in the first operation under substantially the same conditions as regards thickness of coating, rate of application, and the like. After the application of the coating in this operation, the material was subjected to a crinkle-forming temperature of 180° F. for a period of approximately twenty minutes, at the end of which period a large number of fine, closely spaced, ridges formed throughout the surface area. The temperature was then raised to a final drying temperature of about 200° F. as before, and in about six hours the surface coating had dried completely with a lightly corrugated surface appearance.

It is to be understood that the specific data presented in the preceding examples is not to be considered a limitation of the invention. Thus the temperature to which the material is

subjected during the final drying stage may be maintained at any desired value, although temperatures high enough to affect deleteriously either the fabric (or other material being coated) or the coating composition, naturally are to be avoided. The invention relates to selecting the crinkle-forming temperature to produce the desired crinkle, and thereafter completing the drying at a suitable temperature, usually higher in order to shorten the drying operation.

I claim:

In a process of producing crinkled coated surfaces, the steps of applying a crinkle coating composition to an article of manufacture, and heat treating said coating in successive heating stages of increased temperatures by heating said coating at a temperature of not less than 110° F. for a relatively short period of time to form the crinkles and to control the character thereof, and then heating the coating in a distinct heating stage at a temperature of about 200° F. to set the crinkles formed in the first heating stage and to dry the coating substantially completely.

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