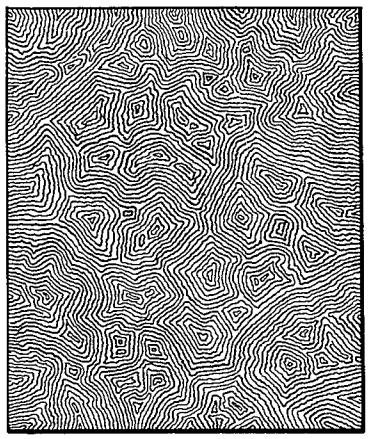
March 13, 1934. F. B. ROOT 1,950,417

WRINKLE FINISH FOR FLEXIBLE ARTICLES

Filed April 17, 1929

Fig. 1.



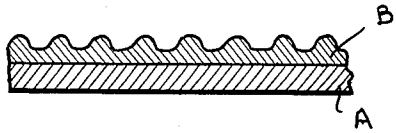
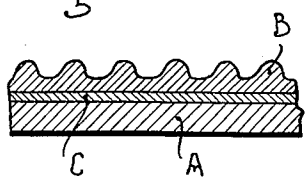


Fig. 2.

Fig. 3.



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WRINKLE FINISH FOR FLEXIBLE ARTICLES

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40 Claims. (Cl. 91—70)

This invention relates to that class of finishes known as wrinkle finishes, and more particularly is directed to compositions and methods which are adapted to produce wrinkle finishes on flexible articles, such as leather, paper, cloth, artificial leather, rubber, etc., and to articles carrying such finishes.

Wrinkling finishes with which the present invention is concerned are quite distinct from any of the finishes known in the prior art. In that prior art, in the production of continuous finishes, an attempt was made to produce as smooth a finish as possible. The so-called crackle finishes need not concern us here for the reason that such finishes are discontinuous, a portion of an upper coat being broken, so that a lower coat is visible to produce the crackle effect. The wrinkle finishes, on the other hand, are concerned with continuous finishes or coatings.

One of the objects of the present invention is the production of wrinkle finishes on porous and pliable bases including leather, paper, cloth, artificial leather, rubber, etc.

In the production of such wrinkle finishes, a coating of selected composition is applied to the surface of the desired article, and the coated article is then subjected to drying conditions under which wrinkling is developed. The following may be taken as a possible explanation of the wrinkling action, but it should be understood that in offering this explanation, the invention is not limited thereby, nor by the theoretical considerations presented herein, since the compositions and methods herein outlined result in a substantial and desirable wrinkle coating or finish, and are not limited in any manner by the theoretical considerations presented. I may offer by way of explanation, however, what appears to be the cause of such wrinkling effect. The wrinkling appears to be due to rapid oxidation of the surface of the applied film forming a skin over the less oxidized material on the interior of the film, the surface skin increasing in volume and expanding laterally, and the less oxidized material on the interior of the film being of a lower viscosity, flows into the folds produced by expansion of the surface skin. The general effect is that of a level surface carrying ridges projecting therefrom and running over the surface. These ridges, while distributed throughout the surface, do not form a regular pattern. Nevertheless a finish of pleasing and attractive appearance is obtained.

There is set forth below a more detailed description of the compositions and methods utilized for the production of the articles included within the present invention, but it should be understood that this more detailed description is given by way of explanation only, and not by way of limitation, since various changes may be made therein by those skilled in the art without departing from the scope and spirit of this disclosure.

In connection with that more detailed description there is shown in the accompanying drawing in

Figure 1 a plan view of a flexible base carrying the wrinkle finish of the present invention; in

Figure 2 a cross section of the article of Figure 1 enlarged to show the ridges in greater detail, the coating being applied directly to the base; and in

Figure 3 a cross section enlarged to show the ridges in greater detail in which the wrinkle finish coating is applied over an intermediate coating, the latter being applied directly to the porous base.

In the production of wrinkle finishes upon porous pliable bases, certain considerations are noted. The finish must be flexible after it has been baked, and must retain that flexibility for a relatively long period of time. This flexibility may be secured by the use of a long oil wrinkling formula, that is a composition in which the oil content is relatively high. Desirably the composition should contain a large amount of a wrinkling oil, and in addition, in order to modify the size and type of wrinkles, as well as to increase the flexibility, it is advisable to include a non-wrinkling oil, such as a slow drying oil, which, when dry, forms a flexible film of which soya bean oil is exemplary, or a non-drying oil such as castor or rape-seed oil. Plasticizers and flexibilizers are also desirable ingredients for producing or increasing flexibility.

When the material being treated is leather, or other material which might be adversely affected by undue heating, the finish should be capable of being baked at a low temperature, a temperature low enough to avoid any danger of damaging the leather or other material to which the finish has been applied. Compositions which bake at fairly low temperatures are obtainable by including relatively large quantities of a wrinkling oil in the formula.

A wrinkling finish for use on leather, etc., must also be susceptible to hardening in a fairly short period of baking. This results in economy through increased production, and also prevents injury of the leather, or other material, through long heating. Quick hardening may be secured among other things by the use of a liberal amount of driers, especially a cobalt drier, such as cobalt linoleate.

It is not safe generally to subject leather, paper, cloth, rubber, artificial leather, and similar materials to a high temperature for any length of time, since these substances have a tendency to deteriorate and to become brittle on prolonged heating. Also thick porous masses, such

as plaster-board, plaster-castings, fiber-board, card-board, wood, etc. to which a baked finish is applied are preferably finished by baking at the lowest temperature possible in order to avoid blistering. Air in the pores of the material expands to such an extent as to push the still plastic finish away from the surface of the material.

For producing the desired effect, compositions are chosen which, under proper drying or baking conditions, give the particular effect denominated. The drying oils have proved to be desirable components of such wrinkle finish varnishes or compositions. Among the drying oils, there may be noted for use for these purposes the more common materials such as blown linseed oil, raw linseed oil, perilla oil, China wood oil, blown China wood oil, and partially oxidized or preoxidized China wood oil. The oils vary in their rate of oxidation and their wrinkling properties as is more fully described below. An investigation of the various drying oils that are available shows that the conditions under which these drying oils give the best results vary with the particular drying oil being utilized. For example while excellent results may be obtained with raw China wood oil or with blown China wood oil, the best effects with perilla and linseed oils are obtained when these oils are used either in the form known as blown or oxidized oils. The present application is particularly concerned with the utilization of the more common drying oils in the production of wrinkle finishes, but the other less commonly known drying oils that may be mentioned and may be similarly utilized include chia, oiticica, walnut, poppy-seed, sunflower, candle nut, lumbang, hempseed, fish, etc. The oils which may be used in the production of wrinkle finishes may be generically referred to as "wrinkling oils" to distinguish them from the large class of non-wrinkling oils including primarily the semi-drying and non-drying oils. In referring to the wrinkling oils with which the present invention is particularly concerned for reasons set forth herein, oils like perilla and linseed which give best results in the production of wrinkle finishes when they are in the blown form are referred to as oils of the perilla-linseed type.

An oil which like China wood oil gives excellent results in wrinkle finishes, whether blown or unblown, is referred to hereinafter as an oil of the China wood type.

The various oils differentiate themselves to some extent in their properties in the production of wrinkle finishes. For example, comparisons of four oils, namely blown China wood oil, untreated China wood oil, blown perilla oil and blown linseed oil, show that the relative activity of these wrinkling oils in wrinkling finishes may be expressed in a series as follows: Blown China wood oil 5; raw China wood oil 6½; blown perilla oil 8; and blown linseed oil 12. This series expresses the fact that the oils bearing the lowest numbers are the more powerful in their wrinkling tendencies and consequently the order of the oils given above represents the wrinkling power of these oils in the specified compositions, blown China wood oil being the most powerful of the oils mentioned.

Further comparison of the several oils in relation to the resin content when such resin is of the wrinkling finish type to be further defined below shows that for the production of the best results with such oil-resin compositions there is a difference in oil-resin ratios depending on the type of oil used. For example with blown China wood oil the best appearance is obtained when the ratio of oils to resin is approximately from 6 to 18 gallons of oil to 100 lbs. of resin. For blown perilla oils the best ratios are from 10 to 30 gallons of oil to 100 lbs. of resin, while for blown linseed oil the best ratios are from 14 to 35 gallons of oil to 100 lbs. of resin. For untreated China wood oil the ratio is approximately from 8 to 25 gallons of oil to 100 lbs. of resin. These oil-resin ratios also illustrate a difference between the action of the oil in the wrinkling finish composition.

A further factor which illustrates differences between the several wrinkling oils is in connection with the drying and baking operation. Other factors being the same except for variations in the composition in the character of oil used, show that in the production of the best effects in compositions utilizing wood oil (untreated) the time is approximately ten per cent more than when blown China wood oil is used, while for blown perilla and blown linseed oil the baking temperature should be from 20 to 25 per cent more than that used with blown China wood oil compositions. Unless otherwise indicated below in further defining the present invention, it will be understood that when blown perilla and blown linseed oils and other blown oils of the perilla-linseed type are referred to, these oils include oxidized oils and similar products although they may not be specifically mentioned at the particular point under consideration.

While specific drying oils are mentioned above, it is understood of course that mixtures of the various drying oils particularly in their blown or oxidized condition may be utilized in the production of satisfactory wrinkle finishes, the range of proportions when mixtures of such oils are used being the arithmetical average of the ranges of the oils when used alone. And while a varnish or other composition to be used to produce a wrinkle finish must contain a substantial proportion of a wrinkling oil, admixtures of the non-wrinkling oils may be used so long as the amount of the latter is not sufficient to eliminate the desired wrinkle effect in the finish obtained.

In general it may be stated that in such admixtures the best effects are obtained if not less than half of the oil mixture is a wrinkling oil. For example two or more wrinkling oils and two or more non-wrinkling oils may be mixed and a varnish produced therefrom with the addition of the resins, driers and thinners. In such case the sum of the amounts of all the wrinkling oils should desirably be at least one-half of the total oil mixture. Among the non-wrinkling oils there may be mentioned specifically soya bean oil, and other semi- and non-drying oils such as cotton seed, corn, castor, rape-seed, rubber seed, olein, etc. Such non-wrinkling oils may be either the raw oils or the blown or otherwise treated oils.

Of the resins usable in the production of wrinkle finishes, which resins may be denominated wrinkling finish resins, the following are noted: Congo, kauri, damar, Cumar, Pontianak, manila, Zanzibar, elemi, mastic, phenol-formaldehyde resins particularly of the oil soluble variety, glycerol-phthalic condensation products particularly of the oil soluble variety, paracoumarone, Congo ester, rosin ester, and mixtures of these resins and resin esters.

Certain substances exhibit a tendency to inhibit the wrinkling effect. Among such substances there may be mentioned pyroxylin, nitrocellulose, gilsonite, and rosin. These wrinkle

inhibiting substances should therefore not be used in any proportions in the composition which would prevent the desired development of wrinkles in the finish. Such wrinkle inhibiting substances when used in small amounts have a tendency to produce very fine wrinkles while in large amounts they may completely eliminate the wrinkling effect. Rosin, if used in large amount, also tends to produce irregularities in the size and in the interval between wrinkles in the resulting finish. While rosin in any amount which adversely affects the wrinkling properties should be avoided, rosin in limited amount is a desirable ingredient, since it acts to prevent the jellying or polymerization of the oil.

Solvents or thinners are not a main factor since any moderately volatile solvent can be used. Preferably the major portion of the solvent or thinner should distil below about 325° F. The thinner used may be a mixture of several thinning components. The low boiling thinner evaporates more quickly from the varnish or enamel film promotes the rapid formation of a surface skin, and during drying assists in maintaining a greater differential between the degree of oxidation of the surface skin and the oil within the film. When the finish is dried at elevated temperatures, the use of low boiling thinners also assists in eliminating any tendency toward sagging of the finish during the drying operation.

The following are illustrative of the thinners and solvents that may be used: light naphtha, toluol, benzol, petroleum ether or ligroin (benzine), acetone, carbon tetrachloride, alcohol, chloroform, ethyl acetate, etc., and mixtures of these. To some extent, the character of the finish may be varied by the quantity and character of the thinner used. Turpentine and other high-boiling thinners may also be used. More pronounced wrinkles are produced with compositions containing the lower boiling thinners. These thinners and solvents do not produce the wrinkling effect, but their use is for the purpose of permitting the spreading of the oil and resin composition on the surface, after which function the thinners and solvents evaporate.

Driers and drier combinations are also an important element in the composition since the wrinkled effect appears to be somewhat determined by the rate of oxidation of the wrinkling oil. Such driers as cobalt acetate, red lead, manganese borate, lead linoleate, etc., used alone or in admixture with each other or with other driers are illustrative. These driers primarily hasten the hardening action. They also speed up the wrinkling somewhat.

The following examples illustrate compositions that may be utilized in the production of wrinkling finishes on flexible or pliable materials:

	Pounds
(1) Congo	100
Rosin	5
Red lead	1¾
Manganese borate	¾
Cobalt linoleate	2
	Gallons
China wool oil	2½
Blown wood oil	11½
Blown soya bean oil	5
Light naphtha	5
Toluol	20

Formula 1 represents a 19 gallon varnish, which gives quite pronounced wrinkles, the size of which wrinkles can be modified by allowing the film to air-dry before it is baked. It has been found that the size of wrinkles in these finishes may be modified by this expedient of air-drying prior to the baking operation. If the article is placed in the oven immediately after the wrinkling varnish or enamel has been applied, finer wrinkles are obtained than if the film is allowed to air-dry before it is placed in the oven. For example, after drying at room temperature for about an hour before being placed in the oven, much coarser wrinkles are obtained in the finish than if the article is baked immediately after the film is applied.

	Pounds
(2) Congo	100
Rosin	5
Red lead	1¾
Manganese borate	¾
Cobalt linoleate	2
	Gallons
China wood oil	2½
Blown wood oil	9¾
Blown soya bean oil	5¾
Light naphtha	5
Toluol	19

This is similar to Example 1 except for slight differences in the amount of blown wood oil and soya bean oil. The wrinkling effect obtained by baking the film is of a fairly fine pattern the size of the wrinkles being capable of modification as to size by a short period of preliminary air-drying.

The formulas given above can also be used as a wrinkling finish that can be applied to sheet metal that is intended for stamping and forming. The elasticity and hardness of the finish after baking are sufficient to withstand the effects of such operations.

	Pounds
(3) Congo	100
Litharge	2
Manganese oxide	½
Cobalt linoleate	5
	Gallons
China wood oil	2½
Blown wood oil	15½
Blown soya bean oil	16
Light naphtha	5
Toluol	24

The above varnish gives a particularly good wrinkled effect. It is of the long-oil type and contains a large amount of non-wrinkling oil.

	Pounds
(4) Amberol	100
Cobalt linoleate	2½
	Gallons
Blown wood oil	15
Rape-seed oil	10
Toluol	35

This formula gives fine wrinkles and a flexible film. The color is quite light due to the type of resin that is used. This makes it useful as a clear wrinkle finish over colored stenciled or printed designs on paper, tin, etc.

"Amberol" is a name for synthetic resins made from phenol formaldehyde and rosin or rosin ester. Many phenol formaldehyde materials produced without the rosin ester are not soluble in oils, but by including enough rosin or its glyceride in the compositions, an oil soluble prod-

uct results. These resins are known by different names, such as "Amberol", "Albertol" and "Bakesite".

	Pounds
(5) Amberol	100
Cobalt linoleate	3
	Gallons
Blown linseed oil	15
Blown wood oil	9
Light naphtha	5
Toluol	22

This formula illustrates the use of blown linseed oil and also denotes a composition that does not contain a non-wrinkling oil. The wrinkles are fairly coarse and quite uniform.

	Pounds
(6) Congo	100
Rosin	5
Red lead	1¾
Manganese borate	¾
Cobalt acetate	2
	Gallons
China wood oil	2½
Blown wood oil	6½
Blown linseed oil	3½
Rape-seed oil	1¾
Dibutyl phthalate	1¾
Light naphtha	5
Toluol	22

This composition gives well-defined and fairly course wrinkles, and illustrates the use of a non-volatile liquid, dibutyl phthalate, in the production of a wrinkled coating.

	Pounds
(7) Congo	40
Amberol	60
Lead linoleate	5½
Manganese borate	1¾
Cobalt linoleate	2
	Gallons
China wood oil	1
Blown perilla oil	12
Blown wood oil	2½
Rape-seed oil	6
Light naphtha	5
Toluol	24

The above is exemplary of a varnish containing blown perilla oil and this formula gives a satisfactory wrinkled effect.

In compounding these compositions, the following method is given for the production of such a composition from Congo, rosin, China wood oil, blown China wood oil, red lead, manganese borate, light naphtha and toluol. This method of compounding the materials is merely illustrative. The Congo is placed in a kettle and melted fairly close until very fluid. This will generally involve a temperature of about 600° F. The raw China wood oil is then added, and this will cool the mixture considerably. Immediately the rosin is added, and this will prevent jellying or polymerization. The red lead is then added, and the temperature run back to approximately 565°. The temperature of the mixture is allowed to drop to 520° F. and the blown China wood oil and manganese borate are added. Reduction in temperature to approximately 520° at this point is desirable to avoid flashing of blown China wood oil. The admixture of materials at this point will reduce the temperature to about 480°. It is then heated to 510°. The temperature is then reduced to 390°, and the thinners, naphtha and toluol, added.

As indicated above non-wrinkling oils may be utilized in the composition. Among the non-wrinkling oils available for these purposes there are mentioned raw soya bean oil, and other semi- or non-drying oils, such as cotton seed, corn, castor, rape-seed, rubber-seed, olein, etc. These oils may be used either as raw oils, or as boiled oils.

In producing the improved wrinkling finishes of this invention, it is advantageous to dry or bake the applied finish or varnish or enamel preferably at an elevated temperature, depending on the type of article being treated. While for metals and other surfaces resistant to deterioration by heat, temperatures as high as 450° F. and even higher may be utilized, for the finishes here described, the temperatures used should desirably not rise above 225° F.; and temperatures from 160° to 200° F. include the range most suitable for employment both as to the appearance of the finish thus obtained, and with reference to the effects of heat upon the base to which the finish is applied. Temperatures as low as 120° F. have also been utilized. At these elevated temperatures rapid oxidation of the surface of the applied film is promoted, and any tendency toward diffusion of oxidation products from the surface into the interior of the film is lessened. In general, it may be said that drying at these elevated temperatures accentuates the wrinkling and assists in providing a harder finish.

Wrinkling finishes should be baked for a sufficient length of time to produce a coating that is hard enough for the purposes in hand. For example when lacquers or other compositions containing solvents are to be applied upon the wrinkle finish serving as an under coat the baked finish should be hard enough to withstand the action of such solvents or lacquers. At 200° F. the coating is sufficiently hard for this purpose after about 2 hours baking. With higher temperatures shorter periods of drying or baking may be utilized while at lower temperatures longer heating is generally required. Thus at 225° F. about 1½ hours is sufficient time while at 150° F. about 4 hours baking is required. The baking period is also somewhat dependent on the type of composition used since wrinkling finish compositions containing wrinkling oils of the perilla-linseed type require from 20 to 25 per cent longer heat treatment at the same temperature than do similar compositions utilizing blown wood oil.

In addition to the higher oil content providing added flexibility so that the long-oil compositions are desirable for use in metal stamping or on leather, paper, cloth, rubber, etc., the higher oil content in the composition also results in wrinkling at lower temperatures which is also desirable with these flexible or pliable materials. As a general rule sufficient flexibility in the coating will be secured with an oil content of at least 18 gallons of oil to 100 lbs. of resin. This amount of oil may be made up of any proportion of wrinkling to non-wrinkling oil within the limits discussed above. However the stated amount of oil for securing flexibility may vary with other considerations, and that given is exemplary.

While in many instances, the wrinkling finish may be applied directly to the surface of the leather, as illustrated in Figure 2 of the drawing,

where the wrinkle finish coating B is shown applied directly to the base A, it has been found desirable, especially if the material is very porous to apply a coat of a flexible sizing to the article before the application of the wrinkling finish, this sizing acting as a sealer or homogenizer to the surface. This is illustrated in Figure 3 of the drawing, where the base A is first provided with a sealing coat C, upon which is placed the wrinkle finish B. The use of a sealing coat is desirable in those cases where the porosity of the base is such that the wrinkling varnish or enamel would be absorbed to such an extent as to prevent or substantially eliminate the wrinkling effect. Furthermore, material absorption of the composition by the base requires longer baking, since evaporation of the solvent and diffusion of the oxygen to the interior is hindered.

As exemplary of such sealing or sizing coats, there may be used a flexible-long oil varnish, a highly plasticized nitrocellulose lacquer or any other material which adheres to the leather, etc., and dries to yield a smooth flexible coating to which the wrinkling finsh may be applied. The following formula for a lacquer which is particularly applicable as a sealing coat is noted:

	Per cent
Nitrocellulose	10
Heavy blown castor or rape-seed oil	15
Dibutyl phthalate	5
Solvent	70

This lacquer is thinned to spraying consistency and applied to the leather. After drying for about an hour the wrinkling composition is sprayed on and the leather, etc. baked.

Another suitable sizing material is obtained by adding a large quantity of thinner, such as toluol to any wrinkling composition given above. An equal volume of thinner may be used for this purpose. The thinned material is then sprayed on the leather, and either baked or air-dried. The coating thus obtained is generally not heavy enough to wrinkle, and much is absorbed by the surface, preventing absorption of the subsequent coat.

It has been found desirable also to avoid the presence in the sealing coat over which a wrinkle finish is to be applied, of appreciable amounts of soluble wrinkle-inhibitive materials, such as rosin or the other substances referred to above.

There have been set forth above a number of considerations directed to the types of compositions and the baking temperatures which affect the character of the wrinkles produced in the finish. Other factors, however, are also found which affect the character of the wrinkles produced. For example the thickness of the applied film will result in differences in the finish. Thinner films give finer wrinkles and thicker films coarser wrinkles. When spraying is used, spray nozzles giving coarse atomization give greater deposition of composition and consequently coarser wrinkles, while on the other hand spray nozzles of finer atomization give thinner films with finer wrinkles. To illustrate the production of a layer which gives a satisfactory wrinkling effect, a gallon of the stated wrinkling compositions may be used to cover an area of about 260 square feet.

For the production of wrinkle finishes having a textured effect by the production of accentuated rugosities at certain points or areas in the finish the article to be treated may desirably be coated with a relatively heavy coating of the desired composition and baked in an inclined position which inclined position may vary from a small angle to the horizontal to a vertical position. The incline of the surface of the article bearing the coating produces a flowing or movement of the wrinkle coating after it is applied and at or about the time when the baking commences and before the baking has caused the setting of the finish to take place to a point where such movement or flowing would be prevented. The effect of such treatment is to produce waves or areas of accentuated rugosities or wrinkles in the more regularly wrinkled finish.

The flowing or movement of the wrinkle coating after it is applied which results in the accentuated rugosities set forth above may be accomplished in other ways than merely by gravity due to the position of the work. For example air currents or other flowing methods may be used.

When gang sprays are used to apply the composition, at certain points the atomization may be made coarser to produce heavier or thicker layers at these points resulting in coarser wrinkles in such thicker layers. Accentuated rugosities distributed in the more uniformly wrinkled finishes may be produced in this manner.

The wrinkle finishes are characterized by an exceedingly important property, namely their remarkable hiding quality. This term "hiding quality" is used in more or less the same meaning that the expression "covering quality" is used in the paint art. It is a remarkable thing for example that a single coat of unpigmented wrinkle finish may be applied to a bright metal surface and the resulting finish will completely mask the metal surface. Other pigmented compositions generally require at least several coats in order to secure a comparable hiding effect.

The baked or dried finishes of the present invention are particularly resistant to softening by lacquer compositions and particularly the solvents used in nitrocellulose lacquers. So that although the rugose surface of the wrinkle finish affords a very extensive area for the action of such solvents or lacquers the baking creates a resistance to such softening action.

Consequently the wrinkle finishes and compositions used for producing such coatings are particularly desirable as under coats where a wrinkle finish is desired and such finishes may then be given one or more coats of pyroxylin enamels, oil enamels, or baking japans. When pigments are used in the wrinkle finish which have a tendency to change or to darken under the action of elevated temperatures, these finishes may be coated with pyroxylin lacquer compositions.

Having thus set forth my invention, I claim:

1. An article of manufacture comprising a flexible material carrying a flexibilized wrinkle finish coating.

2. An article of manufacture comprising a flexible material carrying a wrinkle finish coating containing oils including a wrinkling oil and a wrinkle finish resin, the amount of oil being sufficient to give substantial flexibility to the coating.

3. An article of manufacture comprising a flexible material carrying a sealing coating, and a superposed wrinkle finish coating.

4. An article of manufacture comprising a flexible material carrying a flexibilized baked wrinkle finish coating.

5. An article of manufacture comprising a flexible material carrying a baked wrinkle finish coating containing oils including a wrinkling oil

and a wrinkle finish resin, the amount of oil being sufficient to give substantial flexibility to the coating.

6. An article of manufacture comprising a flexible material carrying a sealing coating, and a superposed baked wrinkle finish coating.

7. An article of manufacture comprising flexible sheet material carrying a wrinkle finish coating containing oils including a wrinkling oil, and a wrinkle finish resin, the amount of oil being sufficient to give substantial flexibility to the coating.

8. An article of manufacture comprising flexible sheet material carrying a sealing coating, and a superposed baked wrinkle finish coating.

9. An article of manufacture comprising flexible sheet material carrying a sealing coat comprising a wrinkling oil and a wrinkle finish resin, and a superposed wrinkle finish coating.

10. An article of manufacture comprising flexible sheet material carrying a sealing coat comprising a flexible sizing, and a superposed wrinkle finish coating.

11. An article of manufacture comprising flexible sheet material carrying a sealing coat comprising a highly plasticized nitrocellulose lacquer, and a superposed wrinkle finish coating.

12. The method of producing wrinkle finishes on flexible articles of manufacture which comprises applying to said article a wrinkle finish coating, and baking said coating at a temperature sufficient to produce the wrinkle finish, but below that at which the article would be deleteriously affected.

13. The method of producing wrinkle finishes on flexible articles of manufacture which comprises applying to said article a wrinkle finish coating containing oils including a wrinkling oil and a wrinkle finish resin, the amount of oil being sufficient to give substantial flexibility to the coating, and drying said coating at a temperature sufficient to produce a wrinkle finish but below that at which the article would be deleteriously affected.

14. The method of producing wrinkle finishes on flexible articles of manufacture which comprises applying to said article a sealing coat, drying the same, applying a wrinkle finish coating, and drying the latter at a temperature sufficient to produce a wrinkling finish but below that at which the article would be deleteriously affected.

15. The method of producing wrinkle finishes on articles of manufacture which comprises applying to said article a wrinkle finish coating, air-drying said coating, and then baking the same.

16. The method of producing wrinkle finishes on flexible sheet material which comprises applying to said material a wrinkle finish coating and drying said coating at a temperature below that at which the material would be deleteriously affected, but high enough for a sufficient length of time to produce a wrinkle finish.

17. The method of producing wrinkle finishes on porous material which comprises applying to said material a wrinkle finish coating, and drying said coating at a temperature sufficient to produce a wrinkle finish but below that at which blistering appears in the coated article.

18. The method of producing wrinkle finishes on a flexible sheet material which comprises baking flexible material carrying a flexibilized wrinkle finish coating at a temperature of from 160 to 200° F.

19. A wrinkle finish composition for producing wrinkle finishes upon flexible articles, said composition comprising a wrinkle oil and a wrinkle finish resin, drier and solvent, the proportions of the ingredients being sufficient to yield wrinkle finishes, and the amount of oil being sufficient to give substantial flexibility to the coating.

20. A composition as set forth in claim 19, which includes a substantial proportion of a non-wrinkling oil.

21. A coating composition comprising a wrinkling oil, a non-wrinkling oil, a wrinkle finish resin, a drier and thinner in proportions to yield a wrinkle finish.

22. An article of manufacture carrying a wrinkle finish coating produced with a composition containing a wrinkling oil and a non-wrinkling oil, the proportion of the latter being insufficient to prevent wrinkling of the composition.

23. A coated material comprising a flexible base material, and a flexible coating thereon having a crinkled surface obtained without mechanical embossing, said coating comprising heat treated China wood oil, a semi-drying oil and a suitable filler.

24. A coated material comprising a fabric base material and a flexible coating thereon having a crinkled surface obtained without mechanical embossing, said coating comprising a heat treated mixture of China wood oil, a semi-drying oil and a drier.

25. A coated material comprising a woven base fabric and a flexible coating thereon having a crinkled surface obtained without mechanical embossing, said coating comprising a heat treated mixture of substantially two parts of China wood oil to one part of a semi-drying oil and a drier.

26. A coated material comprising a flexible base material and a flexible coating thereon having a wrinkled surface, said coating comprising a wrinkling oil, a semi-drying oil, and a suitable filler, in proportions to yield a flexible coating when dried on an article of manufacture.

27. A coated material comprising a fabric base material and a flexible coating thereon having a wrinkled surface, said coating comprising a wrinkling oil, a semi-drying oil, and a drier, in proportions to yield a flexible wrinkle coating when dried on an article of manufacture.

28. A coated material comprising a flexible base material and a flexible coating thereon having a wrinkled surface, said coating comprising a wrinkling oil, a non-drying oil and a suitable filler.

29. A coated material comprising a fabric base material and a flexible coating thereon having a wrinkled surface, said coating comprising a wrinkling oil, a non-drying oil and a drier, in proportions to yield a flexible wrinkle coating when dried on an article of manufacture.

30. A composition for producing wrinkle finishes upon flexible articles, said composition comprising a wrinkle oil, a semi-drying oil, and a wrinkle finish resin, drier and solvent, the proportions of the ingredients being sufficient to yield wrinkle finishes and the amount of oil being sufficient to give substantial flexibility to the coating.

31. A wrinkle finish composition adapted to yield a flexible wrinkle finish when dried on articles of manufacture carrying the same, said composition comprising a heat-treated China wood oil, a semi-drying oil, and a suitable filler.

32. A wrinkle finish composition adapted to yield a flexible wrinkle finish on articles of manufacture carrying the same, said composition

comprising a heat-treated mixture of China wood oil, semi-drying oil, and a drier.

33. A wrinkle finish composition adapted to yield a flexible wrinkle finish on articles of manufacture carrying the same, said composition comprising a wrinkling oil, a semi-drying oil, and a suitable filler.

34. A wrinkle finish composition adapted to yield a flexible wrinkle finish on articles of manufacture carrying the same, said composition comprising a wrinkling oil, a semi-drying oil, and a drier.

35. A wrinkle finish composition adapted to yield a flexible wrinkle finish on flexible articles, said composition containing a wrinkling oil and a plasticizer, in proportions to yield a plasticized flexible wrinkle coating when dried on a flexible article carrying the same.

36. A wrinkle finish composition adapted to yield a flexible wrinkle finish on flexible articles carrying the same, said composition containing a wrinkling oil, a non-wrinkling oil, and a non-volatile organic liquid plasticizer in proportions to yield a plasticized flexible wrinkle coating when dried on a flexible article carrying the same.

37. A wrinkle finish composition adapted to yield a flexible wrinkle finish on articles of manufacture carrying the same, said composition comprising a wrinkling oil, and dibutyl phthalate, in proportions to yield a plasticized flexible wrinkle coating when dried on a flexible article carrying the same.

38. An article of manufacture carrying a wrinkle finish coating of a wrinkling oil and a plasticizer, in proportions yielding a flexible wrinkle finish coating.

39. An article of manufacture carrying a wrinkle finish composition of a wrinkling oil, a non-wrinkling oil, and a non-volatile organic liquid plasticizer, in proportions yielding a flexible wrinkle finish coating.

40. A flexible article of manufacture carrying a wrinkle finish composition of a wrinkling oil and dibutyl phthalate, in proportions yielding a flexible wrinkle finish coating.

FRANK BRIAN ROOT.