

UNITED STATES PATENT OFFICE

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WALL PAPER

No Drawing.

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This invention relates to wall paper and to products of that kind used for similar purposes.

Wall paper as at present manufactured, particularly in the lighter shades which are so desirable, is easily stained by finger marks, grease, water, and other things the presence of which cannot be avoided. The result is that wall paper, for instance around light switches, becomes stained. No method is known by which these stains can be successfully removed from the paper.

It has been proposed to overcome the disadvantages inherent in the older types of wall paper to coat the wall paper with varnish or with a lacquer. These proposals, however, were unsatisfactory because the coatings did not offer sufficient resistance to grease, ink, and other stains, because they gave the paper a shiny, varnished appearance, and because paper so coated, when coated with the starch paste adhesive preparatory to hanging, curls up in a way which makes hanging practically impossible.

It is an object of this invention to prepare wall paper which is water resistant and which can be washed free of stains, even of grease and ink, without leaving a noticeable trace behind. It is another object of this invention to prepare wall paper having these desirable characteristics but whose appearance does not differ from that of ordinary wall paper.

These objects are attained by coating the wall paper with a cellulose compound containing composition containing a wax-like substance, a solvent, with or without a plasticizer, with or without a flattening agent and other ordinary ingredients of cellulose lacquers. If advantage can be obtained by so doing I may impregnate the paper whose protection is desired, adding a surface coat of my lacquer or not as expediency dictates.

In my compositions a cellulose ester or a cellulose ether may be used with success.

Among the compounds which I have found useful are cellulose acetate, ethyl cellulose, benzyl cellulose, and cellulose nitrate. If cellulose nitrate be used preferred results are obtained by the use of medium or high viscosity cellulose nitrate. The other cellulose esters and ethers are also useful.

In my composition I use a wax-like material such as various metallic stearates and/or waxes such as carnauba, candelilla, Montan, beeswax, flax, raphia, cotton seed, condang, pisang, ocotilla, sugar cane wax, insect (Chinese) wax, psylla, bayberry, coffee berry, palm, japan, myrtle, ceresin, ozokerite, synthetic waxes such as chlorinated naphthalene, and paraffin waxes. Waxes having a high melting point, such as carnauba wax, give results which are to be preferred. Good results will be obtained with waxes in solution but preferred results are obtained if the wax is in suspension.

A plasticizer may be included in my compositions and usually gives preferred results. The plasticizer may be any of those which are commonly used for the softening of cellulose compounds or may be one of the class containing the esters of the mono ethers of polyhydric alcohols. Among the plasticizers I may name dibutyl phthalate, tricresyl phosphate, cellosolve stearate, and castor oil.

The inclusion of a flattening agent such as zinc stearate or aluminum stearate tends to give a wall paper with even less tendency to curl than a wall paper coated with a composition which does not include a flattening agent.

In making up my wall paper lacquer the wax-like material is ground in a material, such as a hydrocarbon, which will be inert toward the dyes contained in the wall paper. Alcohol being a solvent at least in some degree for many dyes, the use of large quantities of alcohol is to be avoided. After a very fine suspension of the wax-like substance in the hydrocarbon is obtained the grinding is

stopped and the wax suspension is added in the proper proportions to the other ingredients of the composition.

Examples of suitable finished compositions are found below.

Example I

	Parts by weight
10 High viscosity nitrocellulose.....	6.5
Dibutyl phthalate.....	6.0
Aluminum stearate.....	4.1
Carnauba wax.....	3.0
Denatured alcohol.....	3.5
15 Ethyl acetate.....	20.4
Toluol.....	16.7
Gasoline.....	23.2
Butyl acetate.....	14.7
Pentasol.....	1.9
20	100.0

Example II

	Parts by weight
Pyroxylin.....	6.20
25 Carnauba wax.....	9.75
Dibutyl phthalate.....	3.00
Denatured alcohol.....	2.00
Toluol.....	19.80
Ethyl acetate.....	20.00
30 Butyl acetate.....	10.00
Gasoline.....	29.25
	100.00

Example III

	Parts by weight
35 High viscosity nitrocellulose.....	6.2
Carnauba wax.....	3.2
Zinc stearate.....	6.5
40 Cellosolve stearate.....	2.0
Dibutyl phthalate.....	3.0
Denatured alcohol.....	2.0
Ethyl acetate.....	20.0
Toluol.....	16.0
45 Butyl alcohol.....	6.2
Butyl acetate.....	15.0
Gasoline.....	19.9
	100.0

Example IV

	Parts by weight
50 Nitrocellulose.....	6.5
Aluminum stearate.....	4.5
Carnauba wax.....	3.0
55 Chlorinated naphthalene (synthetic wax).....	6.0
Butyl acetate.....	8.4
Pentasol (synthetic amyl alcohol).....	2.1
Denatured alcohol.....	25.7
60 Toluol.....	15.1
Ethyl acetate.....	9.3
Gasoline.....	13.9
Isobutyl acetate.....	5.5
65	100.0

Example V

	Parts by weight
Benzyl cellulose.....	6.5
Dibutyl phthalate.....	3.0
Aluminum stearate.....	4.5
Carnauba wax.....	3.0
Denatured alcohol.....	13.1
Butyl acetate.....	8.4
Pentasol (synthetic amyl alcohol).....	2.1
Toluol.....	24.6
Ethyl acetate.....	8.9
Gasoline.....	8.9
Xylol.....	11.3
Butyl alcohol.....	5.7
	100.0

This example illustrates, among other things, the use of a cellulose ether in my coating compositions. Wall paper coated with this composition showed good ink resistance, good grease resistance, and had a good flat appearance but tended to curl somewhat although not enough to seriously affect its utility.

Example VI

	Parts by weight
Nitrocellulose.....	6.5
Aluminum stearate.....	4.5
Carnauba wax.....	3.0
Dibutyl phthalate.....	1.0
*Synthetic resin.....	6.0
Butyl acetate.....	33.8
Pentasol (synthetic amyl alcohol).....	2.1
Denatured alcohol.....	3.7
Toluol.....	2.2
Xylol.....	24.3
Gasoline.....	8.9
	100.0

*The synthetic resin herein had the following composition:

	Pounds
Phthalic anhydride.....	392.5
Cocanut oil.....	335.5
Diethylene glycol.....	212.5
Glycerin.....	59.5
	120

This example illustrates, among other things, the use of a synthetic resin in a coating composition made according to my invention. Wall paper coated with this composition had good ink resistance, good grease resistance, and a good flat appearance.

Example VII

	Parts by weight
Nitrocellulose-----	6.5
Aluminum stearate-----	4.5
5 Carnauba wax-----	3.0
Dibutyl phthalate-----	6.0
Beckacite resin-----	1.5
Denatured alcohol-----	3.7
Butyl acetate-----	28.4
10 Pentasol (synthetic amyl alcohol)-----	2.1
Toluol-----	25.0
Ethyl acetate-----	10.4
Gasoline-----	8.9
15	100.0

This example illustrates, among other things, the use of a modified natural resin in a coating composition made according to my invention. Wall paper coated with this composition had good ink and grease resistance and a good flat appearance but curled somewhat more than the foregoing compositions although the curling was not sufficient to prohibit its use. This composition and the composition of Example VI appear to have a slightly greater water-permeability than the other examples but not a permeability sufficient to interfere with their utility.

30 My wall paper has overcome former difficulties. The lacquer coating is invisible and does not have the undesirable shiny appearance of ordinary lacquers. It is able to withstand contact with grease, such as vaseline, for an hour at room temperature without permitting penetration of the grease. Butter which remains on the paper for a half an hour does not penetrate sufficiently to cause discoloration and can be removed without a trace. Ordinary red or blue black ink may be splashed upon the coating, allowed to dry completely, and may then be washed off cleanly with a damp cloth. Among the most important features of my wall paper is the fact that it does not curl appreciably when the starch paste of the paperhanger is applied.

The compositions of my invention are useful not only in the coating of wall papers but are also useful in the coating of other fibrous materials, finding a use for example in the lacquering of clothing such as straw hats.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that I do not limit myself to the specific embodiments thereof except as defined in the appended claims.

I claim:

1. A washable wall covering comprising a fibrous base, and superposed thereon a surface coating comprising a cellulose compound and a material from the group consisting of

waxes and metal stearates, the character and proportion of the ingredients of the coating being such as to give an invisible, matte, washable surface film.

2. A washable wall covering comprising a fibrous base, and superposed thereon a surface coating comprising cellulose nitrate and a material from the group consisting of waxes and metal stearates, the character and proportion of the ingredients of the coating being such as to give an invisible, matte, washable surface film.

3. A washable wall covering comprising a fibrous base, and superposed thereon a surface coating comprising a cellulose compound, a wax, and a metal stearate, the character and proportion of the ingredients of the coating being such as to give an invisible, matte, washable surface film.

4. A washable wall covering comprising a fibrous base, and superposed thereon a surface coating comprising a cellulose compound, a wax, a metal stearate, and a plasticizer, the character and proportion of the ingredients of the coating being such as to give an invisible, matte, washable surface film.

5. A washable wall covering comprising a fibrous base, and superposed thereon a surface coating comprising a cellulose compound and carnauba wax, the character and proportion of the ingredients of the coating being such as to give an invisible, matte, washable surface film.

6. A washable wall covering comprising a fibrous base, and superposed thereon a surface coating comprising cellulose nitrate and carnauba wax, the character and proportion of the ingredients of the coating being such as to give an invisible, matte, washable surface film.

7. A washable wall covering comprising a fibrous base, and superposed thereon an invisible, matte, and washable surface coating or film comprising cellulose nitrate and a wax in the relatively approximate proportions of 100 parts cellulose nitrate for 46 to 155 parts of the wax.

8. A washable wall covering comprising a fibrous base, and superposed thereon an invisible, matte, and washable surface coating or film comprising cellulose nitrate and a metal stearate in the approximate relative proportions of 100 parts cellulose nitrate for 63 to 104 parts of the stearate.

9. A washable wall covering comprising a fibrous base, and superposed thereon an invisible, matte, and washable surface coating or film comprising cellulose nitrate, a wax, and a plasticizer in the approximate relative proportions of 100 parts cellulose nitrate, 46 to 155 parts of the wax, and 15 to 92 parts of the plasticizer.

10. A washable wall covering comprising a fibrous base, and superposed thereon an invisible, matte, and washable surface coating

or film comprising cellulose nitrate, a wax, and a metal stearate in the approximate relative proportions of 100 parts cellulose nitrate, 46 to 51 parts of the wax, and 63 to 104 parts of the stearate.

11. A washable wall covering comprising a fibrous base, and superposed thereon an invisible, matte, and washable surface coating or film comprising cellulose nitrate, a wax, a metal stearate, and a plasticizer in the approximate relative proportions of 100 parts cellulose nitrate, 46 to 51 parts of the wax, 63 to 104 parts of the stearate, and 15 to 92 parts of the plasticizer.

12. A washable wall covering comprising a fibrous base, and superposed thereon an invisible, matte, and washable surface coating or film comprising cellulose nitrate, carnauba wax, aluminum stearate, and dibutyl phthalate in the approximate relative proportions of 100 parts cellulose nitrate, 46 to 51 parts of the wax, 63 to 104 parts of the stearate, and 15 to 92 parts of the phthalate.

13. A washable, substantially non-curling wall paper comprising a wall paper base, and superposed thereon a surface coating comprising a cellulose compound and a material from the group consisting of waxes and metal stearates, the character and proportion of the ingredients of the coating being such as to give an invisible, matte, washable surface film.

14. A washable, substantially non-curling wall paper comprising a wall paper base, and superposed thereon a surface coating comprising cellulose nitrate and a material from the group consisting of waxes and metal stearates, the character and proportion of the ingredients of the coating being such as to give an invisible, matte, washable surface film.

15. A washable, substantially non-curling wall paper comprising a wall paper base, and superposed thereon a surface coating comprising a cellulose compound, a wax, and a metal stearate, the character and proportion of the ingredients of the coating being such as to give an invisible, matte, washable surface film.

16. A washable, substantially non-curling wall paper comprising a wall paper base, and superposed thereon a surface coating comprising a cellulose compound, a wax, a metal stearate, and a plasticizer, the character and proportion of the ingredients of the coating being such as to give an invisible, matte, washable surface film.

17. A washable, substantially non-curling wall paper comprising a wall paper base, and superposed thereon a surface coating comprising a cellulose compound and carnauba wax, the character and proportion of the ingredients of the coating being such as to give an invisible, matte, washable surface film.

18. A washable, substantially non-curling

wall paper comprising a wall paper base, and superposed thereon a surface coating comprising cellulose nitrate and carnauba wax, the character and proportion of the ingredients of the coating being such as to give an invisible, matte, washable surface film.

19. A washable, substantially non-curling wall paper comprising a wall paper base, and superposed thereon an invisible, matte, and washable surface coating or film comprising cellulose nitrate and a wax in the relatively approximate proportions of 100 parts cellulose nitrate for 46 to 155 parts of the wax.

20. A washable, substantially non-curling wall paper comprising a wall paper base, and superposed thereon an invisible, matte, and washable surface coating or film comprising cellulose nitrate and a metal stearate in the approximate relative proportions of 100 parts cellulose nitrate for 63 to 104 parts of the stearate.

21. A washable, substantially non-curling wall paper comprising a wall paper base, and superposed thereon an invisible, matte, and washable surface coating or film comprising cellulose nitrate, a wax, and a plasticizer in the approximate relative proportions of 100 parts cellulose nitrate, 46 to 155 parts of the wax, and 15 to 92 parts of the plasticizer.

22. A washable, substantially non-curling wall paper comprising a wall paper base, and superposed thereon an invisible, matte, and washable surface coating or film comprising cellulose nitrate, a wax, and a metal stearate in the approximate relative proportions of 100 parts cellulose nitrate, 46 to 51 parts of the wax, and 63 to 104 parts of the stearate.

23. A washable, substantially non-curling wall paper comprising a wall paper base, and superposed thereon an invisible, matte, and washable surface coating or film comprising cellulose nitrate, a wax, a metal stearate, and a plasticizer in the approximate relative proportions of 100 parts cellulose nitrate, 46 to 51 parts of the wax, 63 to 104 parts of the stearate, and 15 to 92 parts of the plasticizer.

24. A washable, substantially non-curling wall paper comprising a wall paper base, and superposed thereon an invisible, matte, and washable surface coating or film comprising cellulose nitrate, carnauba wax, aluminum stearate, and dibutyl phthalate in the approximate relative proportions of 100 parts cellulose nitrate, 46 to 51 parts of the wax, 63 to 104 parts of the stearate, and 15 to 92 parts of the phthalate.

In testimony whereof, I affix my signature.
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