

UNITED STATES PATENT OFFICE.

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DECORATIVE LEAF.

984,805.

Specification of Letters Patent. Patented Feb. 21, 1911.

No Drawing. Original application filed October 21, 1908, Serial No. 458,914. Divided and this application filed February 8, 1909. Serial No. 476,844.

To all whom it may concern:

Be it known that I, JULIUS A. C. FICHTMUELLER, a citizen of the United States, and resident of the borough of Richmond, county of Richmond, city of New York, and State of New York, have made certain new and useful Inventions Relating to Decorative Leaf, of which the following is a specification, this application being a divisional continuation of my copending application 458,914, filed October 21, 1908.

This invention relates to decorative leaf comprising a body of metallic or other coloring matter suspended in a suitable carrier and having on one or both sides if desired a suitable adherent layer of protector preferably comprising colloidal material so as to effectively protect the coloring matter in the body layer from tarnishing or other deterioration. Such leaf may of course be used as substitute gold leaf or colored decorative leaf used in decorating, such as sign work, book-binding and so forth, and may be produced for example by spraying upon sized backing fabric a layer of protector, then a layer of the carrier and incorporated coloring material, then if desired another layer of protector in such way that the whole becomes united or incorporated in drying for example into a single leaf or film which may be removed by treating the fabric with a loosening agent capable of dissolving or otherwise loosening or disintegrating the size on the fabric without acting upon the leaf which may then be transferred to a suitable support for drying, cutting and packing.

This decorative leaf may be made of practically any thickness desired, such thin leaf being readily produced as to be entirely satisfactory for use in fine book-binding decoration in the same way as gold leaf and the carrier and protector may be formed of such material that the leaf will become firmly adherent to the leather, cloth or other material of the book without the necessity of a preliminary sizing thereof. The coloring matter of suitably pulverized metal or other material, preferably in very finely divided condition, may be embedded and inclosed in a suitable protective carrier or binder formed of suitable resinous gums or other

material having when in thin sheets or films sufficient toughness and pliability which may usually be insured by the incorporation of sufficient softening material, such as camphor or other unctuous, that is, pliable waxy or fatty material, acting in a generally similar way to camphor which also seems to prevent undesirable adhesion of the leaf to the heated embossing book-binding tools for instance. Resinous gums, such as shellac, copal, sandarac, gamboge, mastic, dammar, camphor benzoïn, pontianac, and so forth, are suitable for this purpose and may be used either separately or incorporated together in suitable proportions, nitrated starch or cellulose being employed in some cases if desired. Such binding materials may of course be dissolved in any suitable volatile organic solvents therefor, such for example as alcohols, including wood, grain or amyl alcohol or their esters, such as amyl acetate or in acetone or other ketones, ethers, turpentine, and so forth. The protector when used may be formed of generally similar material, preferably comprising suitable colloidal material to more effectively prevent injurious atmospheric action and should of course be so thoroughly united with the carrier and incorporated coloring matter forming the corresponding portion of the body of the leaf as to constitute when completed a single tough pliable leaf, thus being effectively accomplished for instance by superimposing the layers of protector and body material before the solvent liquids have unduly evaporated therefrom.

A suitable protector liquid may be prepared by dissolving three to four parts of camphor, two to three parts of gum gamboge, which may if desired be used to slightly increase the red tinge in bronze leaf, one to three parts of sandarac, two to four parts shellac and one to four parts of soluble nitrated cellulose in sixty-four parts of amyl acetate and sixty-four parts of wood, grain or denatured alcohol. Another protector liquid may be prepared by dissolving four to six parts of refined white shellac and one part of gum amber or gum copal in thirty parts of wood alcohol and twelve parts of acetone. A suitable illustrative protective

carrier liquid for use in connection therewith may be prepared by dissolving three to four parts of camphor, three to six parts of shellac if desired and one to five parts of soluble nitrated cellulose in sixty-four parts of amyl acetate and ten parts of acetone. Another illustrative carrier liquid of this character may be prepared by dissolving three parts of sandarac, three parts of mastic and one part of benzoin in thirteen parts of acetone, twelve parts of benzole and four parts of turpentine; and another similar carrier may be made by dissolving four parts of white shellac and one or two parts of copal in forty parts of wood alcohol and five parts of acetone. Before application three to six parts or so of the metallic bronze powder or other coloring matter, preferably in the extremely finely divided condition secured by flotation separation may be thoroughly incorporated with twenty-five parts of the carrier liquid which should of course be in a uniform condition secured by assisting the action of the solvents by heat and agitation if necessary, preferably with filtration of the resultant material before incorporation of the coloring matter therewith, and it is of course understood that such protective carriers may be used alone for making the leaf if desired without employing separate protector layers in connection therewith, suitable tinting material such as gum gamboge, etc., being in that case incorporated in the carrier itself if desired.

In making the leaf the protector liquid may be uniformly applied in any desired way as by spraying, for instance, to suitable sized backing, such as cloth, paper, or other material coated with water-soluble size, such for example as animal or vegetable glues or pastes or water-soluble gums to give it a substantially even surface. Then after the thin layer of protector has set sufficiently, as for instance by being exposed to the air for some seconds, a coating of the liquid carrier and incorporated coloring matter may be sprayed or otherwise applied thereto so as to become thoroughly incorporated throughout the impinging faces and inseparably united. The carrier liquid forming the leaf body may be applied so as to give a substantially uniform or a mottled or grained surface where, for instance, two differently colored carrier liquids are applied to the same surface, or if desired a body having any suitable design or pattern may be produced by spraying or otherwise applying carrier liquid through a stencil or the like. Then if desired another thin layer of protector may be sprayed or otherwise applied to the layer of carrier and coloring matter forming the body of the leaf preferably after it has become set to the desired extent. The leaf on the backing may if desired be

further dried by artificial heat or otherwise so as to produce a tough pliable leaf in which the metallic or other coloring matter is embedded in the body and inclosed on one or both faces by the practically integral layer or film of protector. The leaf may however be produced by applying directly to the sized backing the layer of protective carrier and incorporated coloring material which dries to produce leaf in which the coloring matter is sufficiently embedded in and protected by the material of the carrier to be valuable for many purposes. The leaf may then be removed from the backing fabric by the use of any desired loosening agent, as for example the coated backing fabric may be immersed or otherwise treated with a suitable size solvent or loosener capable of dissolving or loosening the size without objectionable action on the leaf. With such water-soluble sizes as indicated immersion of the coated fabric in a tank of water for the desired time is usually sufficient, the water impregnating the paper or other fabric which should preferably be of an open texture and dissolving or loosening the size, thus rendering the leaf loosely adherent to the backing fabric, although of course it is understood that in some cases a substantially water impervious backing material having a surface of the desired character formed in any way may be used, where the loosening fluid or other loosening agent can either operate for a sufficient time or act effectively through the backing or leaf.

By applying a suitable support, such for instance as a sheet of cloth or paper to the leaf and removing the same from the water or other loosening agent, the compound fabric and leaf, for example, may be roughly dried and placed in position so that the leaf lies upon the supporting fabric after which the backing fabric may be readily removed leaving the leaf resting upon the support on which it may be dried, cut to size and mounted in the usual way for subsequent utilization. A convenient way of detaching the dry leaf from the backing fabric is to apply to the leaf the supporting fabric and immerse the compound sheet in a tank of the desired size solvent or loosener with the backing fabric uppermost. Then when the loosener has detached the leaf from the backing fabric the whole may be removed from the water, roughly dried and the backing fabric removed, leaving the leaf loosely lying upon the supporting fabric for subsequent treatment. It is of course understood that those familiar with this art can readily carry out this process of manufacturing the leaf in a continuous manner by the use of long webs of backing and supporting fabric formed of cloth or suitably prepared paper passing through suitable tanks or otherwise being subjected to the coating and loosening

processes, the process being described in connection with separate sheets for the sake of simplicity.

It is of course understood that carriers and protectors formed of other substantially water-insoluble gums or other binding material may be similarly used in connection with a water-soluble size and aqueous size solvent or loosener. Another such illustrative carrier and protector liquids may be composed of three parts of gum copal, two parts of gum sandarac dissolved in fifty parts of turpentine or other oily solvent in the usual way, with the aid of heat if desired, before incorporating in the case of carriers the metallic or other coloring matter, such for example as anilin or the like. Another illustrative liquid of this description may be formed by dissolving one to three parts of soluble nitro-cellulose in a mixture of twenty parts of ether and one or two parts of alcohol in the usual way; three parts of white shellac are then dissolved in forty parts of acetone and five parts of amyl acetate and mixed with the other solution. If desired, however, the carrier or protector liquid may be composed of casein or water-soluble gums, glues or the like provided the size solvent or loosening agent is of such character as not to undesirably affect the leaf after it has been formed upon the backing. An illustrative liquid of this kind may be formed by dissolving five to eight parts of bleached fish glue or isin-glass in fifty parts of water and two parts of glycerin with heating and agitation during which the coloring matter is preferably incorporated after the binding material has been dissolved when the material is to be used as a carrier. Such a carrier or protector may be used in connection with backing fabric which has been sized for example with shellac or other gums and in such case the size solvent or loosener may be wood or grain alcohol or acetone or a mixture thereof. Of course, when turpentine soluble gum is employed as the size the size solvent or loosener may be turpentine, naphtha, benzol or the like so long as it has no substantial injurious effect on the carrier or leaf upon the backing fabric.

Having described this invention in connection with a number of illustrative ingredients, formulas, proportions, and methods of operation, to the details of which disclosure the invention is not of course to be limited, what is claimed as new and what is desired to be secured by Letters Patent is set forth in the appended claims.

1. The thin pliable compound decorative leaf having a body comprising metallic coloring matter incorporated in substantially transparent binding material comprising colloidal and softening material and an adherent substantially transparent protector

layer on both sides of said body comprising colloidal material.

2. The thin pliable compound decorative leaf having a body comprising coloring matter incorporated in binding material and an adherent substantially transparent protector layer comprising colloidal material.

3. The thin compound decorative leaf having a body comprising coloring matter incorporated in binding material comprising colloidal and softening material and an adherent transparent protector layer comprising tinting material.

4. The compound decorative leaf having a body comprising metallic coloring matter incorporated in binding material comprising a colloidal coloring matter and a transparent adherent protector layer comprising colloidal and tinting material.

5. The thin pliable compound decorative leaf having a body comprising metallic coloring matter incorporated in binding material comprising gummy matter and an adherent transparent protector layer on both sides of said body comprising gummy and colloidal material.

6. The pliable compound decorative leaf having a body comprising metallic coloring matter incorporated in binding material comprising colloidal matter and a substantially transparent protector layer on both sides of the same comprising colloidal material.

7. The compound decorative leaf having a substantially uniform body comprising metallic coloring matter and an adherent substantially transparent protector layer on both sides of the same comprising protective and tinting material.

8. The compound decorative leaf having a substantially uniform body comprising metallic coloring matter and an adherent substantially transparent protector layer on both sides of the same comprising protective material.

9. The compound decorative leaf having a body comprising coloring matter incorporated in binding material comprising gummy matter and an adherent substantially transparent protector layer on both sides of said body comprising gummy and colloidal material.

10. The compound decorative leaf having a body comprising coloring matter incorporated in binding material comprising colloidal matter and a substantially transparent protector layer on both sides of the same comprising colloidal material.

11. The compound decorative leaf having a substantially uniform body comprising coloring matter and an adherent substantially transparent protector layer on both sides of the same comprising protective and tinting material.

12. The compound decorative leaf having

a substantially uniform body comprising coloring matter and an adherent substantially transparent protector layer on both sides of the same comprising protective material.

13. The compound decorative leaf having a body comprising metallic coloring matter incorporated in binding material comprising gummy matter and an adherent substantially transparent protector layer comprising gummy and colloidal material.

14. The compound decorative leaf having a body comprising metallic coloring matter incorporated in binding material comprising colloidal matter and a substantially transparent protector layer comprising colloidal material.

15. The compound decorative leaf having a body comprising metallic coloring matter and an adherent substantially transparent protector layer comprising protective and tinting material.

16. The extremely tenuous compound decorative leaf having a substantially uniform body comprising metallic coloring matter and an adherent substantially transparent protector layer comprising protective material.

17. The compound decorative leaf having a body comprising coloring matter incorporated in binding material comprising gummy matter and an adherent substantially transparent protector layer comprising protective material.

18. The thin pliable compound decorative leaf having a body comprising coloring matter incorporated in binding substantially transparent material and a protector layer comprising colloidal material.

19. The thin pliable compound decorative leaf having a body comprising coloring matter and an adherent substantially transparent protector layer comprising protective and tinting material.

20. The thin pliable compound decorative leaf having a substantially uniform body comprising coloring matter and an adherent substantially transparent protector layer comprising protective material.

21. The thin pliable decorative leaf comprising metallic coloring matter incorporated in a protective substantially transparent carrier comprising colloidal material and camphor.

22. The extremely tenuous pliable decorative leaf fairly comparable in weight to gold leaf and having a body comprising metallic coloring matter and an adherent substantially transparent protector layer comprising colloidal and softening material.

23. The extremely tenuous pliable decorative leaf fairly comparable in weight to gold leaf and having a body comprising coloring matter and incorporated binding material and an adherent substantially

transparent protector layer comprising colloidal protective material.

24. The extremely tenuous pliable substitute gold leaf fairly comparable in weight to gold leaf and having a body comprising metallic coloring matter and an adherent substantially transparent protector layer comprising colloidal protective material.

25. The extremely tenuous pliable substitute gold leaf fairly comparable in weight to gold leaf and having a body comprising metallic coloring matter and an adherent substantially transparent protector layer.

26. The extremely tenuous pliable decorative leaf having a body comprising coloring matter and a substantially transparent protector layer comprising colloidal material.

27. The extremely tenuous pliable decorative leaf having a body comprising coloring matter and an adherent substantially transparent protector layer comprising protective material.

28. The thin pliable compound decorative leaf having a body comprising metallic coloring matter incorporated in substantially transparent binding material comprising colloidal and softening material and an adherent substantially transparent protector layer on both sides of said body comprising colloidal material, said leaf comprising adhesive material adapted to make the leaf adherent to the material to which it is applied without the necessity of using sizing.

29. The thin pliable compound decorative leaf having a body comprising coloring matter incorporated in binding material and an adherent substantially transparent protector layer comprising colloidal material, said leaf comprising adhesive material adapted to make the leaf adherent to the leather or other supporting material to which it is applied without the necessity of using sizing.

30. The extremely tenuous pliable decorative leaf fairly comparable in weight to gold leaf and having a body comprising coloring matter and incorporated binding material and an adherent substantially transparent protector layer comprising colloidal protective material, said leaf comprising adhesive material adapted to make the leaf adherent to the leather or other supporting material to which it is applied without the necessity of using sizing.

31. The extremely tenuous pliable substitute gold leaf fairly comparable in weight to gold leaf and having a body comprising metallic coloring matter and an adherent substantially transparent protector layer comprising colloidal protective material, said leaf comprising adhesive material adapted to make the leaf adherent to the leather or other supporting material to which it is applied without the necessity of using sizing.

32. The extremely tenuous pliable decorative leaf having a body comprising coloring matter and incorporated adherent substantially transparent protective and softening material, said leaf comprising adhesive material adapted to make the leaf adherent to the leather or other supporting material to which it is applied without the necessity of using sizing.

33. The extremely tenuous pliable decorative leaf fairly comparable in weight to gold leaf and having a body comprising coloring matter and incorporated adherent binding and protective material, said leaf comprising adhesive material adapted to make the leaf adherent to the leather or other supporting material to which it is applied without the necessity of using sizing.

34. The extremely tenuous pliable decorative

leaf fairly comparable in weight to gold leaf and having a body comprising coloring matter and incorporated adherent binding and softening material including colloidal protective material.

35. The extremely tenuous pliable decorative leaf fairly comparable in weight to gold leaf and having a sprayed body comprising coloring matter and incorporated adherent binding, softening and protective material, said leaf comprising adhesive material adapted to make the leaf adherent to the leather or other supporting material to which it is applied without the necessity of using sizing.

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Witnesses:

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