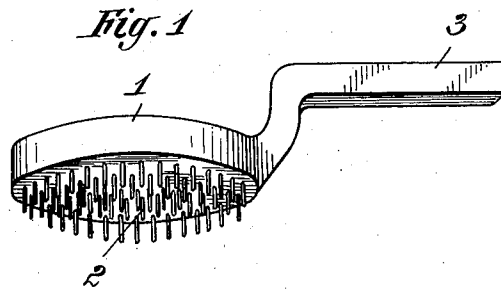
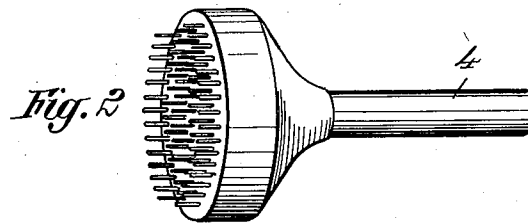
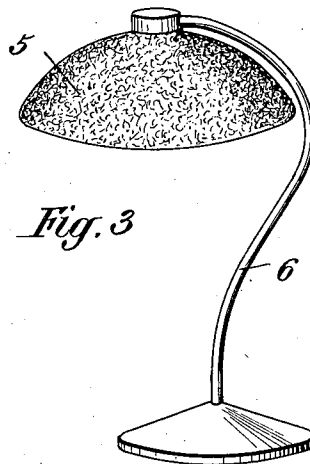


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METHOD FOR PRODUCING LIGHT SHADES

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METHOD FOR PRODUCING LIGHT SHADES

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4 Claims. (Cl. 154—2)

This invention relates to a method for the production of seamless light shades, lamp shades and the like. The object of the invention is to attain a light-technical improvement in shades which are made from fabric, paper or foil webs, sheets, or scraps.

The invention is directed particularly to a method for the production of such light shades, in which sheets, webs or even scraps of paper, foils or fabrics are laid in layers with binding agents over a support, whereupon a uniform distribution of the layers and a compression of the mass is effected by working with beater tools so that a seamless translucent shade of any shape and size is produced without the use of matrices.

The best light technical and at the same time aesthetic effect could not be obtained by the methods hitherto generally used because it was not understood how to make the shade produced on the support, really sufficiently translucent while preserving as far as possible the uniformity, strength and nature of the layer and retaining a really tasteful, satisfactory appearance. All the difficulties which hitherto existed are overcome by the invention without detrimentally influencing the mechanical durability and the permanency of the shape. On the contrary, the best light technical effect, the best artistic effect and the greatest permanency of shape of the shade even under fluctuating temperatures are attained by the new method, with at the same time very economical production.

The method consists substantially in that the webs or sheets placed on the support are rendered transparent in a particular manner provided the desired transparency is not already attained by the choice of the prime material.

If highly transparent papers or foils are chosen, that is paraffined papers or paper-like materials such as parchment, the materials known in the trade under the names "pergamoid," "pergamin" and "cellulith" and also cellulose film and artificial resin foils, a certain difficulty is experienced during the treatment, in that, when superposing several layers with binding medium between them, air bubbles are imprisoned which influence the nature of the shade in an undesirable manner. To overcome this difficulty, the leaves, sheets or webs of the materials mentioned are provided, either before or after being placed on the support, with a plurality of narrowly spaced air apertures or incisions or punctures so that any air or gas bubbles which may form can escape into the atmosphere during

the distribution and compression of the shade mass.

If unprepared paper is used, the greatest degree of transparency is attained in that a fibre paste is made on the support, the layer composed of sheets, foils, webs or scraps with interposed binding media containing oil being subjected on the support to a protracted treatment with beater tools so that the original fibre bond is destroyed in a short time to such an extent that a new felting takes place and consequently a new uniform, highly transparent, excellent light-refracting, permanent-shaped and elastic mass produced on drying.

A further improvement of the optic properties of the light shade is obtained if the treatment with the beater tools is at the end carried out in such a manner that a relief-like character with uniformly distributed wrinkles and scars is imparted to the surface. It is also easily possible to increase this relief effect by providing the support with a relief-like surface, or with the aid of special embossing dies reliefs of any kind can be produced in the shade. To increase the aesthetic effect figures of other material may be placed into the shade before the shade mass has hardened and remain in the shade after the hardening of the mass. Embossing dies for embossing relief figures may also be provided with ink to produce colored pictures. By inserting specially shaped pieces any desired patterns can be produced as mother-of-pearl and the like.

The following are examples for the application of the new method.

Example 1

Unprepared paper is chosen as initial material. Unprepared paper possesses the advantage over prepared paper that the fibre bond is easily destroyed. A casein solution to which paraffin oil is added is used as binding medium. Solutions of cellulose or of cellulose derivatives may also be used advantageously instead of casein solution. This possesses the advantage that no premature discoloration of the shade need be feared in use.

The support is made of any desired material which possesses sufficient durability for the production of the shade. Chiefly wood, glass, plaster of Paris and metal come into question.

The layers of paper and binding medium having been placed uniformly on the support until a predetermined thickness is obtained, the beating with beater tools beginning, the strength and frequencies of the blows being such that the fibre

bond is destroyed to a great extent and with the binding medium containing oil a kind of fibre paste is formed.

It may here be mentioned that experiments have shown that in most supports it is not possible to produce a uniform, perfect shade if the fibre paste is previously prepared and then applied on to the support. The beating is not only intended to destroy the fibre bond, but the structure of the shade is at the same time compressed, the mass is uniformly distributed and the strength and elasticity of the finished shade is improved. By suitable turning and by swinging the beating tools the wrinkles and creases can be distributed in a predetermined manner over the surface of the shade so that an artistic and in every way satisfactory effect is produced. Independently hereof embossing dies may be used or figures inserted in the layer of the light shade.

When the shade has been wet-finished on the support it is first allowed to stand in the air for a relatively long period. The air should have good access to the shade from all sides so that the moisture can evaporate uniformly from all sides. On air drying process follows a short drying at moderate temperature in a vacuum.

The total drying period is considerably reduced, if the light shades are stored in a well ventilated room at 30° to 40° C. and then dried for a short time at a uniform temperature in a vacuum furnace. This drying method also results in a further improvement of the stability in shape of the finished shade.

The drying in the vacuum is conditional upon porous materials being used on the support, which might, however, be dispensed with by providing a larger number of small holes in the support, which might be made of sheet metal.

The combined drying process consisting of a preliminary drying with subsequent vacuum drying under moderate heat is one of the most important conditions for the shade keeping its shape subsequently when in use. This drying process is indispensable for all open shaped shades which have a tendency to warp under mechanical stresses. The drying in the vacuum can only be dispensed with in the case of closed shapes, for example in the case of shades of practically closed spherical shape, because in this instance distortion need not be feared. In the case of these closed shapes the use of underlay supports of glass or of very thin gypsum layers is appropriate, these supports being destroyed by light hammer blows when the shade is dry and then removed through a small opening.

When dry and the support has been removed, the shade is provided with a preferably waterproof lye and acid resisting varnish coating which should be transparent and not hygroscopic.

The beater tools used are preferably provided with blunt needles or bristles or even bars. Examples of such beater tools are illustrated in the accompanying drawing, in which:

Fig. 1 shows a beater tool constructed like a hand brush. The brush body 1 carries bristles or needles 2 which are not pointed and may consist of rubber; the handle 3 of the tool may be fitted in a vibrator if the beating is not to be carried out by hand,

Fig. 2 shows a beater tool of modified construction with a handle 4 in the middle of the brush body. The shape of the tool depends upon the shape of the shade to be produced and the manner in which it is to be used,

Fig. 3 shows a lamp 6 with a finished lamp

shade 5 mounted thereon and having wrinkles distributed in a predetermined manner for producing the best optical and artistic effect by turning and swinging the beating device.

Example 2

As initial material prepared, highly transparent papers, parchment, Pergamin, Pergamoid, Cellulith, synthetic foils and cellulose glass film are used. As binding agents the same substances are used as in Example 1 especially cellulose solution, but an oil addition is not necessary as the layers are transparent as such.

The shades are produced in a similar manner to that described in connection with Example 1, only it is not necessary to beat the layers until a fibre paste is produced even in the case of the foils or parchments. On the other hand the imprisonment of air or gas bubbles which might be produced must be prevented, on which account the beater tools are fitted with pointed, hardened steel needles so as to produce by beating holes and incisions in the sheets or webs through which holes any air or gas bubbles can escape.

It is immaterial whether the incising of the webs or sheets is carried out on the support with the beater tools or whether previously incised sheets, webs and foils are used.

Care must be taken that the parchment or foils are not torn to shreds and that no small pieces are punched out of the sheets because otherwise the transparency of the shade will not be attainable. For this reason the beater tools, by which the material is to be incised, must be moved as far as possible perpendicularly to the surface and the spacing of the needles in the tool need not be too close. In the case of simple only slightly cambered shades, the webs or sheets or parchment or the foils are incised in special devices, whereas it is advisable in the case of complicated shade shapes to use the beater tools set with pointed needles for incising on the support.

The shade is finished in the manner set forth in Example 1.

Light shades of any desired shape with a maximum degree of light diffusion and at the same time preserving the strength and elasticity combined with maximum permanency of shape can be economically produced in the manner described.

We claim:

1. Process of producing light shades, comprising the steps of superimposing cellulose films with a cellulose derivative solution therebetween said cellulose films on a shaped support, beating said superimposed cellulose films with said cellulose derivative solution therebetween until a light shade in shape of said support is formed, said beating being carried out in such a manner that the outer films of the thus formed light shade have wrinkles appearing when viewed by transmitted light as veins, drying said light shade, and removing it thereafter from said support.

2. Process of producing light shades, comprising the steps of providing cellulose films with a plurality of narrowly spaced perforations, superimposing said perforated cellulose films with a cellulose derivative solution containing oil between said films on a shaped support provided with a large number of perforations, beating said superimposed cellulose films with said oil-containing cellulose derivative solution therebetween with beater tools in such a manner that a light shade is formed having a shape corresponding to the shape of the support and having an outer

surface with uniformly distributed wrinkles and scars, drying said light shade preliminary in air, and subsequently drying it at the same temperature in vacuum, and then removing it from said support.

3. A light shade, consisting of superimposed cellulose films with a cellulose derivative solution between said films, the outer films of said light shade being shaped in such a manner as to form on the outer surface of the light shade substantially uniformly distributed wrinkles and scars. 10

4. A light shade consisting of a plurality of superimposed translucent cellulose films united by a translucent binding medium, the outer films of the shade having wrinkles appearing when viewed by transmitted light as veins, and the inner films of the shade having a substantially smooth surface. 5

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