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POLYCHROMATIC PRINTING PLATE

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The present invention relates essentially to a printing plate for polychromatic reproduction, chiefly characterized by the fact that it consists in preparing with one or more colouring masses of a single printing plate which may be elastic or hard; said printing plate being used, for example, by coating, with a suitable solvent, either the object such as paper, tissue, ceramic object or the like which is to be printed upon, or the printing plate itself, and in applying the said plate against the said object.

According to another feature of the invention, the colouring masses used in the preparation of the printing plate have as the principal ingredient either dextrin, gumlac, artificial or natural tar, etc., contain suitable pigments which are of the current types and have an adequate solvent which may consist of water, steam, alcohol etc., according to the nature of the main ingredient or base.

The desired quantities of these several colouring masses are applied by hand, by a brush, or by other suitable means, in a fluid, semi-fluid, plastic, elastic, half-hard, hard, pastel or pencil state, or the like, upon any suitable backing, in order to obtain the pattern or design to be reproduced, thus forming the printing plate.

By the use of the said plate, the polychromatic printing is effected in a direct manner and in a single operation, upon articles or objects of all kinds, for instance upon paper, pasteboard, tissues, ceramic objects, etc. In this manner, the artists' production itself forms the printing plate, and this can be reproduced in any desired number of copies. The elastic plate also serves to execute the printing upon objects of all forms, and for instance upon vases.

Further characteristics of the invention will be disclosed in the following description.

In conformity to the invention, a certain number of colouring masses are prepared by preferably employing in all cases the same substance as a basis, with the use of known colouring pigments of all kinds. Such colouring masses may be, as desired, fluid, semi-fluid, elastic, plastic, half-hard, hard or the like. This state of the mass will depend upon the quantity of the solvents employed in its preparation. A fluid mass can be transformed into a plastic mass by treating it for a certain time at a determined temperature in order to eliminate the excess of solvents.

For the preparation of a printing plate, the various masses are employed in the same manner as ordinary colours. The desired amount of each mass is placed by the brush, or directly by hand, or by any other means, upon any suitable backing or support, which may consist of paper, tissue, pasteboard or the like, thus forming the pattern or image which is to be reproduced. The thickness of the layer placed upon the backing

may vary at will. When the image is finished it is dried, and may for this purpose be subjected to the action of heat. This forms the printing plate which serves for the polychromatic reproduction.

The tissue, paper or the like, upon which the printing is to be effected, is covered with a layer of the solvent for the mass forming the basis of the said colouring masses, and the plate is then applied to the said tissue, paper or other. The printing plate itself might be coated with the solvent, whilst the object remains dry. The printing is rapidly effected, and without requiring the use of fixing agents, mordants or like auxiliary substances. The printing plate may have a sufficient thickness to provide for the reproduction of as many copies as desired.

The proper quantities of colouring masses used on the printing plate may as above stated be placed on the latter by hand, by the brush, or in any other manner. The fluid or semi-fluid masses are put on by the brush. As concerns the plastic, elastic, half-hard, hard or other masses, these are adapted for example to produce certain particular surface effects, such as marbled surfaces, foliated surfaces, granular surfaces or the like. The foliated parts of the image or pattern may be preliminarily prepared by hand or by machine, and optionally in moulds, and may consist of superposed thin sheets of a plastic substance. The hard mass may be ground, and grains of a uniform or a variable size may be incorporated into the plastic, semi-fluid, fluid or other masses, and this will form the granular parts of the image. The marbled parts can be formed by superposing sheets of masses of different colours, and by subjecting them to a mechanical action, such as pressure, or by mixing suitable masses of various natures and then rolling them into sheets, or in any other manner.

The different colouring masses herein employed are divided into various classes, according to the nature of the solvents in use, and these include aqueous, alcoholic, acetonic or other masses.

An aqueous mass may have for instance the following composition:

	Grams
Dextrin	10
Glycerin	10
Soap	10
Talc	10
Naphthalene	0,5
Water	16

A pigment of any suitable nature, even metallic, is added in the proper proportion to produce the desired colour. The mixture is heated on the water-bath to 85°-90° C. until a thick mass is formed. The mass is then cooled, and it can

be moulded or mechanically treated by any adequate process.

During the printing operation, the printing plate, or the object to be printed upon, should be moistened by water or steam.

An alcoholic mass may for instance have the following composition:

	Gum-lac.....	100 grams
	Soap.....	15 do
10	Linseed oil.....	15 do
	Egg yolk.....	10 do
	Naphthalene.....	4 do
	Acetic acid.....	5 do
	Glycerin.....	10 do
15	Alcohol, 90°.....	½ litre

Any suitable pigment, even metallic, may be added in any proportion.

The method of preparation of masses of this class is as follows. The gum-lac is first dissolved in the alcohol; the total amount of the pigment, naphthalene, soap, oil and acetic acid, is then added to the gum-lac solution. The whole is boiled until it becomes sufficiently thick, and is then somewhat cooled, then adding the glycerin and heating to 60°-80° C. for a sufficiently long time, while stirring, but without any abrupt movements, in order that no air bubbles shall enter the mixture.

When the mass has reached a certain consistency, the egg-yolk previously beaten with alcohol so as to form a homogeneous mass is added. The mass is then definitely cooled, and is ready for use.

It is often important, in order to prepare a printing plate, to dilute a colour, or to employ a colourless mass upon a part of the said plate, in order to obtain reproductions of graduated tints, and regions without colour. The said colourless mass may have the following composition:

	Gum-lac.....	50 grams
	White alcohol varnish.....	¼ litre
	Liquid soap.....	25 grams
45	Linseed oil.....	15 do
	Acetic acid.....	5 do
	Talc, or potato flour.....	20 do

The method of preparation is analogous to that of the alcoholic colouring masses.

When the printing plate has been thus produced, the printing is performed as usual by placing said plate in the known machines, or in like manner.

The plate or the object which is to receive the

reproduction may be covered with the solvent, by using spraying means, a roller, or in any other suitable way. It should be observed that owing to a more or less prolonged action of heat, it is possible to obtain at will a more or less elastic plate or a hard plate. The elastic plate is specially adapted for printing upon objects having a concave or a convex shape.

The thickness of the plate will depend upon the nature of the object on which the printing is to be effected, and upon the number of reproductions to be made. Old and hardened plates may be employed, provided they are subjected to the action of vapours of water or of alcohol in order to render them elastic. In the case of plates prepared with aqueous masses, the printing can be performed simply in a damp atmosphere, without the use of solvents.

Obviously, the said invention is not limited to the operations herein described, which are given solely by way of example.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. Colouring masses to be used for the manufacture of printing plates for polychromatic reproduction comprising approximately:

	Grams
Dextrin.....	10
Glycerin.....	10
Soap.....	10
Talc.....	10
Naphthalene.....	0,5
Water.....	16
Pigment sufficient amount.	

2. A printing plate constituted with colouring masses, comprising approximately:

	Grams
Dextrin.....	10
Glycerin.....	10
Soap.....	10
Talc.....	10
Naphthalene.....	0,5
Water.....	16
Pigment sufficient amount.	

3. A printing plate for polychromatic reproduction consisting of coloring masses comprising dextrin, glycerine, soap and various pigments.

4. Colouring masses to be used for the manufacture of printing plates for polychromatic reproduction, comprising dextrin, as a base substance, glycerine, soap and various pigments.

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