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(56) Documents Cited
EP 0389252 A US 5213042 A US 4935288 A
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(58) Field of Search
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(54) A printing process

(57) The process comprises underprinting the surface of a material using a plain base colour (e.g. white), a gloss ink, varnish, an alcohol mixture, or a mixture of the above, before conventional printing. The underprinting may be dried using a UV process prior to the conventional printing.

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PRINTING PROCESS

The present invention relates to printing, more particularly, but not solely, offset lithography and gravure and flexographic printing processes.

The cost of printed products is largely dependent upon the cost of the paper used. In gravure printing half-tone illustrations, such as photographs, have to be converted into a printable form by breaking up the image into small dots which form the printing surface after etching. The dots are produced by making a photographic exposure through a glass screen divided into small squares by intersecting dark lines. In this way a dot image on the photographic plate is obtained for printing on cheap course paper (such as newsprint) a screen with 60 lines to the inch is used, but plates made with finer screens must be printed on a better-quality coated paper. Lithographic offset printing is used for the printing of copy (text) as well as pictures and is widely used for the production of books and magazines. A four-colour offset printing press may have two

plate cylinders, each with four sets of inking rollers (one set for each colour) and each printing on one side of a web of paper.

According to the present invention there is provided a printing process including underprinting the surface of material to be printed before printing the material by a method known per se.

By "underprinting" there is meant treating the surface of material to be printed to improve the quality of the material prior to normal printing of the material with text or images.

Underprinting on cheap coarse paper may be effected by printing the paper with a mixture of 4 parts white (normally opaque) printing ink to 1 part varnish. The varnish used is preferably "Dotgain" varnish and the paper thus treated with varnish is given a glossy surface to give a better end result after nominal printing.

The underprinting may be with any plain base colour and the proportion of varnish may be greater than the base colour. The underprinting may be with varnish or varnish mixed with a thinner or a gloss ink.

In a multiple colour offset printing press, e.g. four colour, there may be provided an additional set, e.g.

fifth set, of inking rollers for occasional use or for a special colour. The additional set of inking rollers can be used for underprinting in accordance with the present invention and can print base colour or white or varnish over the whole surface of the material to be printed.

It will be appreciated that the underprinting technique of this invention can be effected in a lithographic process by direct printing from a printing cylinder or could be effected in an offset lithographic process by transfer of the underprinting from a printing cylinder to a blanket cylinder which then transfers (offsets) the underprinting to the paper.

After underprinting ultraviolet drying can be effected prior to normal printing.

An alternative underprinting process in accordance with the invention which obviates any need for ultraviolet drying is to employ a mixture of a plain base colour, and an alcohol such as Isopropyl with or without varnish. A particularly advantageous mixture is 12 parts plane base colour, 12 parts varnish and 1 part Isopropyl but different proportions can be employed dependant upon the properties of the paper to be employed. It will be appreciated that the Isopropyl evaporates rapidly and aids the drying process.

CLAIMS:

1. A printing process including underprinting the surface of material to be printed before printing the material by a method known per se.

2. A process as claimed in claim 1, wherein the underprinting is effected with a plain base colour.

3. A process as claimed in claim 2, wherein the plain base colour is white.

4. A process as claimed in claim 1, 2 or 3 wherein the underprinting is effected with a gloss ink.

5. A process as claimed in claim 1, wherein the underprinting is effected with a varnish.

6. A process as claimed in claim 5, wherein the varnish is Dotgain varnish.

7. A process as claimed in any one of the preceding claims, wherein the underprinting is effected with a mixture containing an alcohol.

8. A process as claimed in claim 7, wherein the alcohol is isopropyl.

9. A process as claimed in claim 1, wherein the

underprinting is effected with a mixture of white ink and varnish.

10. A process as claimed in claim 9, wherein the mixture comprises 4 parts printing ink to 1 part varnish.

11. A process as claimed in any one of the preceding claims, wherein the underprinting is dried prior to normal printing.

12. A process as claimed in claim 11, wherein the drying is effected by an ultraviolet process.

13. A process as claimed in claim 1, wherein the underprinting is effected with a mixture containing 12 parts plane base colour, 12 parts varnish and one part Isopropyl.

14. A process as claimed in any one of the preceding claims in which a multiple colour offset printing press is employed with one set of inking rollers being employed for the underprinting.

15. A process substantially as described herein.

Examiner's report to the Comptroller under Section 17 (The Search report)

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Relevant Technical Fields

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Databases (see below)
(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) WPI (ONLINE DATABASE)

Documents considered relevant following a search in respect of Claims :-
2 TO 15

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
A	EP 0389252 (MURRAY) see column 1, lines 50 to 55	
A	US 5213042 (NUVENTURES) see column 3, lines 4 to 10	
A	US 4935288 (AMER. LABEL) see whole document	
	WPI Accession No 92-407533/50 and AU 9213882 (McMILLAN) (22 October 1992) (see abstract)	

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).