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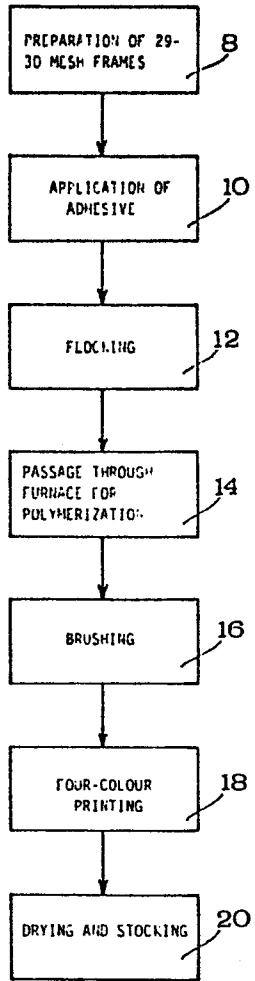
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㉖ **Process for flat printing in several colours or in four superimposed colours by a serigraphic system on figurative supports flocked in relief.**

㉗ The present invention relates to a process for serigraphic flat printing in several superimposed colours by a serigraphic system on figurative supports flocked in relief. Said process consists in the preparation (8) of frames for depositing thereon the acryl-vinyl based adhesive ink, spreading (10) of said adhesive ink on perfectly delineated areas on figurations already printed on paper or anyhow on a flat surface, flocking (12) by known means these delimited areas, recovering (16) the flock in excess, and printing by a serigraphic system (18) said flocked areas with flat printing plates in several colours or by a printing system using four superimposed colours.



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"Process for flat printing in several colours or in four superimposed colours by a serigraphic system on figurative supports flocked in relief"

The present invention relates to a process for flat printing in several colours or in four superimposed colours by a serigraphic system on figurative supports flocked in relief and simulating a chamois or the like leather effect.

5 It is known that one of various methods of embellishing various objects such as clothes, shoes, handbags, brushes, garments, etc. consists in a flocking process by means of any one colour such as red or yellow or green, etc. All these objects of such uniform colours certainly do not afford a precious or rewarding aspect to the observer,  
10 but it is known that by blending several colours the aesthetic aspect of the object can be enhanced to rightly define the elegance, style, agreeable finish of the viewed object.

The attempts of colouring on figurative supports flocked in relief, that hitherto have been undertaken, certainly have not produced  
15 the desired results; rather, the results have been decidedly modest because of the numerous defects encountered in printing the colours, which defects can be identified as the imperfect adhesion of the colours to the flocked base, the easy solubilization of the flocked support because of the various solvents used in the coloured inks, the  
20 expensive and repeated manual operations involved in adhesively adhering the flock of various colours for forming the figure, and still fur-

ther defects known to one skilled in the art.

Therefore, the present invention aims at providing a process for serigraphic printing on a support flocked in relief, by flat printing in several colours or in four colours, with aesthetic characteristics that are drastically improved over what has hitherto been obtained, in addition to considerable saving of production costs.

In particular, the invention proposes the application of this serigraphic printing process to figurative supports flocked in relief and located on paper, cardboard, metallized paper, plasticized paper, fabrics and any other type of material provided that it can be made in sheets. Further, the present process imparts the figures a simulation of chamois leather, thus affording an excellent aspect.

The above and other objects and advantages of the process, which will become apparent from the following description, are achieved according to the invention by a process of serigraphic printing on a support flocked in relief, characterized in that after the application of the flock, flat printing is effected in several colours or in four superimposed colours.

The invention will now be described in detail with reference to the accompanying drawing showing a block diagram useful for better understanding the flat printing process for printing in several colours of four superimposed colours according to the invention.

Various techniques are known for coating figures printed on paper showing persons or objects obtained by coating them with cut-out and stuck-on fabric, or using lightened and stuck-on cotton or any other type of material adapted for the purpose. An excellent solution to this problem is provided by the process according to the present invention which ensures coating of the figures by printing on a support flocked in relief and covering the figures by several colours by a flat printing or four-colour serigraphic method.

It is to be kept in mind that by the flocking treatment the figure acquires a known superficial finish known as the "velvet effect" which

while enriching it slightly also serves as a support adapted to receive the printing colours.

The process according to the present invention consists in the preparation of frames with 29-30 mesh threads for depositing thereon the acryl-vinyl based adhesive ink according to the printing size of the serigraphic printing machine, the operation 8 in the enclosed diagram.

The next phase, indicated by 10, consists in spreading on the frame the acryl-vinyl based adhesive ink by depositing it in well defined areas of the figures shown on the paper sheet or any other product in sheet form (for example, metallized paper, silicone coated paper, rayon or nylon fibre fabrics, plasticized paper, PVC sheets, fabrics, coated paper, etc). This operation can be carried out manually or on serigraphic printing machines of the semiautomatic or automatic type.

The next phase consists in the flocking operation, which is the operation 12 in the enclosed diagram, and in which the flock powder falls on the figures prepared in the previous operation, using a flock of white colour and a length that may vary from some tenths of a millimetre to some millimetres. In this phase, the flock fibres which are electrostatically charged by known machines, are oriented towards the figures on which the acryl-vinyl based adhesive ink has been deposited previously.

After the flocking operation, the paper thus prepared proceeds towards a very rapid polymerization phase for polymerizing the adhesive by passing through a furnace at a temperature oscillating between 60° and 70°C, which is the operation 14. This operation is indispensable for avoiding deformations of the paper sheet, thus ensuring perfect squaring of the register in the printing operation.

By the following operation 16 the flock in excess is brushed and sucked off for further use.

Then follows operation 18 of the enclosed diagram, in which the figure flocked in the preceding operations is flat printed in several colours or in four superimposed colours, using for this printing water ink to avoid the serious disadvantages described previously, but imparting

to the figurations clearness and a high definition.

Previous experiments with the use of normal printing inks have always produced rather disappointing results.

5 The last operation, indicated by 20, of the process according to the present invention consists in drying and stocking or storing the printed material.

10 Finally, it is evident that the essential principles of the invention can be carried out by totally flocking paper sheets, printing them by the previously described techniques and then using them for decorations or coatings or various other applications.

A preferred embodiment of the process for carrying out the invention has been described, but obviously this embodiment may be changed and varied within the scope of the appended claims.

## CLAIMS

1. A process for printing various figurations on supports flocked in relief, characterized in that after the application of flock of white  
5 colour to the figures the latter are printed by a serigraphic flat printing system in several colours or in four superimposed colours.

2. A process for printing various figurations on supports flocked in relief, according to claim 1, characterized in that before the flocking  
10 operation (12) a thin layer of acryl-vinyl based ink adhesive (10) is applied to the support receiving the flock.

3. A process for printing various figurations on flocked supports according to claims 1 and 2, characterized in that polymerization (14)  
of the acryl-vinyl based ink adhesive is effected by conducting the flocked figurations through a furnace at a temperature of 60-70°C

4. A process according to claims 1 to 3, characterized in that after  
15 the polymerizing operation the figurations are subjected to a brushing operation (16).

5. A process according to claims 1 to 4, characterized in that the  
20 figurations on flocked supports are printed by a serigraphic flat printing system (18) in several colours or in four superimposed colours by means of water colours.

6. A process according to claims 1 to 5, characterized in that the  
last operation (20) to be carried out is drying and stocking the printed  
figures.

25 7. Figurations obtained by a process according to one of claims 1 to 6.

