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[54] **DECORATIVE WALL COVERING**

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[52] **U.S. Cl.** **161/82,** 156/75, 156/325, 161/89, 161/251, 161/413

[51] **Int. Cl.** **B32b 5/02,** B32b 27/10, B32b 27/30, B32b 29/02

[58] **Field of Search**.....161/82, 84, 79, 89, 413, 90, 161/92, 93, 94, 95, 97, 167, 406, 411, 88, 254; 156/75, 325

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[57] **ABSTRACT**

A decorative wall covering comprising a paper sheet having a decorative surface which has a continuous coating of a polymeric material thereon, the paper sheet being laminated on its other surface to an open weave fabric whereby the tendency of the covering to curl on wetting with a water-based adhesive is reduced.

5 Claims, No Drawings

DECORATIVE WALL COVERING

This invention relates to a decorative wallcovering comprising a sheet of paper coated on one of its surfaces, its decorative surface, with a coating of a polymeric material such as polyvinyl chloride or polyethylene.

The term "sheet of paper" should be construed to include not only the paper sheets used hitherto as wallcovering materials but also webs mainly of cellulosic fibers impregnated or bonded with a synthetic resin or a rubber latex or other bonding agent.

A disadvantage is that when it is wetted by a water based adhesive the paper absorbs water from the adhesive which causes it to swell and expand. The resistance of the polymeric coating to expansion produces a curl in a transverse direction in the material and when the wallcovering is hung on a wall the longitudinal edges of the material lift away from the wall. This makes it difficult and time consuming to hang the wallcovering. Latex impregnated papers are particularly prone to expansion and are known to expand as much as 2 percent or more when fully wetted.

When a soft polymeric coating, for example a plasticized polyvinyl chloride coating composition containing 50 or more parts of plasticizer per 100 parts of polyvinyl chloride, of less than about 0.003 inch thickness is used the coating appears to have sufficient stretch to expand with the expanding wet paper without introducing an objectionable curl in the product. This is especially so when the effective thickness and rigidity of the coating is reduced by providing the coating with an embossed pattern. However, we have found that when the plasticized polymeric coating has a thickness in excess of about 0.003 inch, it cannot adapt itself to the change in dimensions of the wetted paper and in resisting the tendency of the paper to expand causes the product to curl when adhesive is applied.

When the polymeric coating is unplasticized or has a lower plasticizer content than above, the tendency to curl is pronounced even when the coating thickness is less than 0.003 inch and even when it is less than 0.001 inch. This, of course, places an undesirable restriction on the variety and quality of non-curling polymeric coated papers which can be produced.

We have now found that the tendency of a polymeric coated paper to curl when the paper is wetted by a water based adhesive can be reduced by laminating to the free surface of the paper a fabric which will balance the polymeric coating in resisting the tendency of the paper to expand when wetted. The fabric therefore serves as a relatively non-extensible mesh which resists curling when the paper is wetted.

In accordance, therefore, with our invention we provide a decorative wallcovering comprising a paper sheet having on one of its surfaces a continuous coating of a polymeric material and laminated to its other surface a fabric.

The fabric is permeable to water but essentially, like the polymeric coating, should not be prone to swelling when wetted by the water based adhesive.

Conveniently we laminate the fabric to the free surface of the paper by means of an adhesive. The fabric may be laminated to the paper either before or after the paper has been provided with a polymeric coating. Though any suitable adhesive may be used, particularly suitable adhesives are those based on nitrile rubber.

Preferably the fabric is of open weave and a particularly suitable fabric of our invention is a scrim fabric. By "scrim fabric" we means a low-quality plain cloth of the muslin type with cover factors for both warp and weft of about 4. The weight per unit area of the fabric varies according to the fiber used but it is usually between 0.5 and 2 ounces, per square yard when the fabric is made from cotton. The term "cover factor" means ratio of threads per inch to the square root of the yarn count. For example, a cover factor of 28 indicates that the area is covered by threads laid side by side in contact giving 100 percent coverage: hence a cover factor of 4 indicates about one-seventh coverage.

It will be appreciated that by treating the surface of the paper in the way we propose we will not be prevented from using any of the conventional water based adhesive since a large area of surface of the coated paper will still be accessible. Further, uniform wetting and swelling of the fibers in the paper is not prevented because the adhesive can readily penetrate through and beneath the fabric.

The mechanism of our anti-curl treatment appears to be the two sided resistance to the expanding paper fibers provided by the plasticized or unplasticized polymeric coating and the fabric, which although not reducing the amount of expansion significantly reduces or eliminates the curl by providing balanced forces on each side of the paper.

The wallcovering according to the present invention may conveniently be in the form of rolls of sheet material. The rolls can be provided in a variety of widths depending on the country in which the wallcovering will be sold. In this country the rolls will commonly be provided in a width of about 21 inches. In a number of European countries the rolls will be required to have a width of 55 cms. to meet local requirements.

Our invention will now be further illustrated by the following example:

EXAMPLE

A sample of a wallcovering product consisting of a latex saturated paper having an approximately 0.005 inch coating of plasticized and pigmented polyvinyl chloride, the plasticizer content being 50 parts per hundred parts of resin, was prepared. This product was decorated by printing and embossing in accordance with conventional techniques.

Subsequently a water based starch adhesive was applied to the free surface of the paper and an attempt was made to attach the product to a wall. This was not satisfactory because of excessive curling which caused the longitudinal edges of the wallcovering to lift away from the wall.

Two pieces of the product prepared as above were now laminated through the medium of a nitrile rubber adhesive to:

1. A scrim fabric having a yarn count of 44 × 54 c.c. and weighing 0.75 ounces/square yard; and having 28 ends per inch × 22 picks per inch and
2. A scrim fabric having a yarn count of 44 × 44 c.c. and weighing 1.7 ounces/square yard, and having 58 ends

2. A scrim fabric having a yarn count of 44 × 44 c.c. and weighing 1.7 ounces/square yard, and having 58 ends per inch × 48 picks per inch.

After the laminating adhesive has set, a water based starch adhesive was applied to the fabric/paper surface of each piece. Neither piece curled and it could easily and quickly be attached to the wall.

What is claimed is:

1. A decorative wall covering comprising a paper sheet having a decorative surface which has a continuous coating of a polymeric material thereon, said paper sheet being laminated on its other surface to an open weave fabric whereby the tendency of said covering to curl on wetting with a water-based adhesive is reduced.

2. A decorative wallcovering as claimed in claim 1 in which the polymeric material is unplasticized.

3. A decorative wallcovering as claimed in claim 1 in which the polymeric material is plasticized polyvinyl chloride, the coating having a thickness in excess of 0.003 inch.

4. A wall covering as claimed in claim 1 wherein said fabric is a scrim fabric having a cover factor for both warp and weft of about 4 and weighing between 0.5 and 2 ounces per square inch.

5. A wall covering as claimed in claim 4 wherein said fabric is bonded to said paper by means of a nitrile rubber adhesive and said polymeric material is polyvinyl chloride.

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