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(54) **Articles with stone-like surfaces, and method of manufacture therefor.**

(57) The invention discloses a method of making articles and items with one or more surfaces with a solid stone-like appearance by filling a space with two materials, one of which is a finely cut-up material and the other of which is a filler. The method includes steps which eliminate the apparent thickness of the transparent medium through which the finely cut-up material is seen, thus enhancing the stone-like appearance.

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BACKGROUND OF THE INVENTION

The present invention relates to articles and items of furniture which from a distance appear to be made from, or to have visible surfaces of, solid stone wherein the effect is created by the appearance of a finely divided material when seen at a distance. The present invention also relates to a method of obtaining the solid stone-like appearance.

The phrase "articles and items of furniture", or the like, as used herein includes, but is not limited to: sculptures; large and small household items; wall cladding and coverings; domestic utensils; domestic and commercial furniture, fixtures and fittings; souvenirs; housing for clocks; and ornamental items and jewelry.

A stone-like finish has been found to be possible, by packing a volume of space within an article or item of furniture with finely cut-up material. However, the packing must be extremely dense within the packed volume, otherwise the material tends to settle over a period of time. The resultant visible air gap at the top of the material destroys the visual appearance of a stone-like finish. This settling effect is apparent, after a period of time, even when the material is initially densely packed.

Further, at some, if not all, angles of viewing or distances from the article or item, one is aware of the density or thickness of the transparent or translucent medium covering the material. From some angles or distances this can totally destroy the visible effect of the stone-like appearance.

BRIEF SUMMARY OF THE INVENTION

An object of the present invention is to provide articles and items of furniture which overcome these difficulties and present visible surfaces with a solid stone-like appearance. A further object of the invention is the provision of a method for making such articles and items of furniture.

The present invention provides articles and items of furniture which from a distance appear to be made from, or to have one or more visible surfaces of, solid stone, said articles and items including: a volume of space filled with at least two different types of material, a first type of material which is translucent, and at least one second type of material the or each type of second material being a closely packed, finely divided material; a translucent medium covering all of the visible surface of said space (when filled); and means to secure said materials within said space.

Preferably, the securing means includes the translucent medium.

The term "translucent" as used herein includes, but is not limited to, transparent or clear.

Said translucent medium may be rigid or flexible, depending on the article or item, e.g. a solid base for lamp (rigid medium) or a flexible table mat (flexible medium). Preferably, said medium, if rigid, is clear glass (which may or may not be non-reflective) or a rigid clear plastics material. Said medium, if flexible, preferably is a plastics material capable of being sprayed onto a surface and allowed to set or harden, or applied by other known means.

Said first type of material is in the nature of a filler, and is a liquid which sets to a solid or semi-solid. For example the most preferred filler is a plastics material which is liquid when worked with, but sets to a solid (e.g. a bonding material), and can also act as an adhesive.

Each said second type of material may be any material which is capable of being cut up, crushed (etc) into discrete, fine pieces or that are in this state naturally. For example the second type of material may be wood shavings, paper, fabric, mineral salts, stone chip, shells, sands and so on. The second type of material may also include material which is capable of forming discrete fine pieces, but which is worked with as a liquid, e.g. paint. Preferably, said second type of material is a fabric or paper which is printed or dyed on at least one side in one or more colours.

The printing on the material, where it occurs, is preferably dense. Preferably also, the material is thin, and is printed on both sides.

More preferably, the material is paper in the form of currency notes, of pre-determined denomination(s), that have been withdrawn from public circulation by the duly authorized government body or bank.

Preferably, said securing means includes said bonding material which is used to secure some or all of said first type of material to the inner surface of the translucent medium.

Preferably, said distance is of the order of 1 metre or more.

The present invention also provides a method of making an article or item of furniture which from a distance appears to be made from, or to have one or more visible surfaces of, solid stone, said method including: providing one or more pieces of a translucent medium, each of which forms an external part of said item or article when made; filling a space adjacent to and touching the inner surface of each said translucent medium with at least one closely packed, finely divided second type of material, said material being as described above; securing said second type of material within said space, with a first type of material to exclude all air from the area immediately adjacent the inner surface of each said piece of translucent medium; and completing the making of said item or article.

The above method may further include the step of forming said space (into which said first and second types of material are secured) in the shape of a mould of the article or item. The translucent medium is then secured around the mould, and the making of the article or item completed.

DETAILED DESCRIPTION

By way of example only, preferred examples of articles and items are described below, together with the preferred methods of manufacture.

In a first preferred embodiment of the method of the present invention the faces of a number of pieces of the transparent medium, for example the glass sides of a lamp stand, have a layer of an adhesive filler (a first type of material) applied thereto. The filler is then covered with a layer of finely cut-up currency notes, all of the same denomination (a second type of material). The paper is closely packed across the surface of the filler.

Pressure is applied (either manually or mechanically, in known manner) to flatten the pieces of notes against the glass and to push them into the layer of adhesive filler. The filler is allowed to set. The glass sides are then assembled to make the lamp stand, in known manner.

If so desired, prior to the assembly of the stand, another layer of cut-up material and adhesive filler may be applied in the same manner as described immediately above.

The thickness of the material adhering to the translucent medium, the glass in the above example, will depend on the nature of the second type of material. In the example above, using currency notes as the second type of material the desired thickness of the materials adhering to the glass is between one and five millimetres. With other materials, for example sands, mineral salts, the desired thickness is between 1 and 1.5 millimetres.

The adhesive filler may be any material which is worked as a liquid but which sets to a solid. The filler should also be one which when set is translucent or transparent when less than 1 millimetre thick. In practice it has been found that flexible polyvinylacetate is the most suitable filler.

The result of this method is that there are extremely few or no air gaps between the cut-up material pieces or between the cut-up material and the transparent medium. The effect of this is that regardless of the angle the article or item of furniture is viewed at, the thickness of the transparent medium is not apparent.

Whilst the reason for this is not fully understood, it appears that when a glass or clear plastic surface is backed or filled behind with materials without the adhesive filler, total internal reflection occurs. Thus the thickness of the glass or transpar-

ent medium is visible. When the adhesive agent is used, the inner boundary is altered and thus total reflection cannot occur, apparently. This creates the appearance of an object or surface actually made from the bonded material, whilst still retaining the high gloss properties of the glass or transparent medium used. This apparently creates the effect of highly polished stone or marble.

In a second preferred embodiment of the method of the present invention a money box with the above described external appearance may be made by filling a mould for the desired shape of box with a mixture of finely cut-up currency notes of the same denomination (as the second type of material), and an adhesive (as the first type of material), in known manner. After the mixture has set and is removed from the mould it can either be sprayed with a translucent plastics material, or the translucent material may be molded onto the exterior of the box in known manner to exclude all air adjacent the inner surface of the translucent material.

It will be appreciated that the more densely packed the material is, the finer the grain of the stone-like appearance from a distance. It will also be appreciated that the selection of sizes of the cut-up paper, the colours used in the printing on the paper and the nature and density of the printing, and the density to which the paper is packed may all be varied in achieving a pre-determined stone-like appearance, e.g. the effect of a granite-like appearance can be attained by using densely packed, cut-up ten dollar notes.

It will be appreciated that the finely cut-up paper may be obtained by known means, e.g. cutting paper shredded into long thin strips; using paper that has been cut and shredded by the one machine, etc. It will also be appreciated that the finely cut-up paper may be non-uniform or uniform in shape, depending on the desired effect. If the cuttings are of uniform shape then preferably each piece is very small, e.g. 5 mm x 10 mm, to attain a mottled stone effect from a distance. If a non-uniform shape of piece is used the size of the pieces may be bigger than those described above to create the same effect.

In practice it has been found that the size of the pieces used appears to be less important than the density of the pieces used.

The distance at which the desired stone-like appearance is achieved will depend on the size of the finely cut-up paper, the density to which it is packed, and to a lesser extent the density of the printing on the paper and whether it is printed on one or both sides.

Whilst the above examples have been described with reference to finely cut up paper, it will be appreciated that any material which is capable

of forming discrete pieces of a small size can be used to achieve the desired effect. For example, very attractive effects may be achieved using cut-up fabric, and furniture or decorative articles may be made in accordance with the method of the present invention, using cut-up furnishing fabrics, to give a stone-like article the colours of which repeat the colours of the fabric used for the surrounding furnishings.

Claims

1. A method of making an article or item of furniture (as hereinbefore defined) which from a distance appears to be made from, or to have one or more visible surfaces of, solid stone, said method including: providing one or more pieces of a translucent (as hereinbefore defined) medium, each of which forms an external part of said item or article when made; filling a space adjacent to and touching the inner surface of each said translucent medium with at least one closely packed, finely divided second type of material; securing the or each said second type of material within said space, with a first type of material to exclude all air from the area immediately adjacent the inner surface of each said piece of translucent medium; and completing the making of said item or article.
2. A method as claimed in claim 1 wherein said method includes the steps of applying said first type of material to the or each said piece prior to filling said space, and securing the or each said second type of material within said space by the application of pressure.
3. A method as claimed in claim 2 wherein the steps of claim 2 are repeated at least one more time.
4. A method as claimed in claim 1 wherein said method further includes the step of forming said space (into which said first and second types of material are secured) in the shape of a mould of the article or item.
5. A method as claimed in any one of the preceding claims wherein said pieces of transparent medium are rigid.
6. A method as claimed in claim 5 wherein said pieces are made of glass.
7. A method as claimed in any one of claims 1 to 4 wherein said pieces of transparent medium are flexible.

8. A method as claimed in either claim 5 or claim 7 wherein said pieces are made of a clear plastics material.
9. A method as claimed in any one of the preceding claims wherein each said second type of material is a material which is capable of being cut up or crushed into discrete, fine pieces or that exists in this state naturally.
10. A method as claimed in claim 9 wherein said second type of material includes a material which is capable of forming discrete fine pieces, but which is worked as a liquid.
11. A method as claimed in claim 10 wherein said second type of material is a fabric or paper which is printed or dyed in at least one side of said material in one or more colours.
12. The method as claimed in claimed 11 wherein said second type of material is currency notes that have been withdrawn from public circulation by the duly authorised government body.
13. A method as claimed in any one of the preceding claims wherein said first type of material is translucent or transparent when less than one millimetre thick.
14. A method as claimed in claim 13 wherein said first type of material is polyvinylacetate.



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EUROPEAN SEARCH REPORT

Application Number

EP 90 31 2708

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-4 235 948 (D.F. HOLMES) * Column 2, lines 5-68; column 3, line 48 - column 6, line 32 *	1,4,5,8 -10	B 44 F 9/04
Y	* Column 2, lines 5-68 *	2	
X	GB-A-1 326 006 (STENITE LTD) * Page 1, lines 35-91; page 2, lines 59-111 *	1,4,5,8 ,9	
X	EP-A-0 356 148 (D. BASKIN) * Column 1, line 30 - column 2, line 37; column 3, lines 5-35; column 4, lines 5-14; claims 1-4 *	1,5,7- 10	
Y	US-A-2 644 768 (J.E. MILLER) * Claim 1 *	2	
A	EP-A-0 187 688 (M. UKKONEN) * Page 2, line 6 - page 3, line 37; page 5, lines 10-38 *	1,2,4,9 ,13	
A	EP-A-0 271 288 (DELTAGLASS S.A.) * Column 1, line 40 - column 2, line 47 *	1,11	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B 44 F B 32 B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11-07-1991	Examiner DOOLAN G.J.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	