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Pencil encased in wood for writing, colouring, drawing and cosmetic purposes

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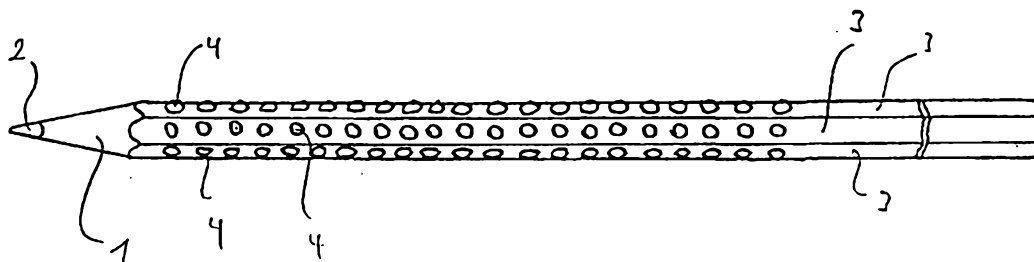
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(54) Title: PENCIL ENCASED IN WOOD FOR WRITING, COLOURING, DRAWING AND COSMETIC PURPOSES

(54) Bezeichnung: HOLZGEFASSTER STIFT FÜR SCHREIB-, MAL-, ZEICHEN- UND KOSMETIKZWECKE



(57) Abstract

The invention relates to a pencil encased in wood for writing, colouring, drawing and cosmetic purposes. The pencil has raised structures, consisting of a synthetic material, which protrude from the surface used to hold the pencil, to form handling surfaces or handling nodules (4).

(57) Zusammenfassung

Bei einem holzgefassten Stift für Schreib-, Mal-, Zeichen- und Kosmetikzwecke stehen von seiner der Handhabung dienenden Oberfläche Griffflächen oder Griffknoppen (4) bildende erhabene Strukturen aus einem Kunststoffmaterial vor.

Description

Wood-gripped pencil for writing, sketching, drawing and cosmetic purposes

5 The invention relates to a wood-gripped pencil for writing, sketching, drawing and cosmetic purposes. Pencils of this type generally have a wooden jacket accommodating a lead in the center. However, the term pencils should also be taken to mean pencil-shaped holders for leads. Wood-gripped pencils
10 generally have smooth surfaces formed by a paint coat. Holding the pencil is therefore associated with relatively great application of force, which causes fatigue on extended use. JP 9-39467 discloses a sleeve consisting of plastic or metal which forms the region of a pencil-like applicator that is
15 close to the point and on whose peripheral surface raised structures are present. These consist of a polyurethane resin and are applied to the sleeve surface by screen printing.

The object of the invention is to propose a wood-gripped
20 pencil of the type mentioned at the outset which is improved in ergonomic respects.

This object is achieved by a pencil in which the surface serving for handling has raised structures of a plastic
25 material forming grip surfaces or grip nubs. The structures projecting from the peripheral surface of the pencil in a raised manner enable firstly the diameter of the pencil to be increased without the ability of the pencil to be sharpened in the standardized sharpening cones of conventional sharpeners
30 being impaired. This applies in particular in the case of hexagonal pencils, in



which the raised structures are arranged on the flattened-off surface areas. Secondly, the grippability of the pencil is increased merely through the presence of the raised structures. A further improvement in the grippability and the tactile properties can be achieved by corresponding plastic material. The raised structures with which at least the front third of the pencil is preferably provided are applied to the pencil surface in the form of an initially flowable plastic composition, the plastic composition subsequently solidifying or being capable of solidification.

The plastic composition is an aqueous polymer dispersion which hardens in a water-resistant manner or a mixture of such dispersions. With respect to adhesive strength, ability to be sharpened, ergonomics and



toxicology of the raised structures or plastic composition, particularly good results are obtained with dispersions which comprise a polymer or copolymer from the group consisting of polyurethane, polyacrylate, polystyrene, polyvinyl acetate and polyester-polyurethane. Dispersions or polymers of this type can very generally be solidified by simple drying. However, it is also conceivable for the said polymers to contain UV-crosslinkable functional groups. Solidification of the plastic material is then possible in a relatively short time. The viscosity of the initially liquid plastic composition can be adjusted by means of thickeners and also by means of fillers.

The solids content of the polymer dispersions is preferably in the range from 30 to 65% by weight. By means of dispersions of this type, both the viscosity of the starting plastic composition and also the consistency of the later raised structures can be adjusted through variation of the filler and thickener content. The fillers used are preferably kaolin talc barium sulfate, titanium white, calcium carbonate and mica. In addition, advantageous fillers are those with which the flexibility, the elasticity, the porosity and the tactile properties of the raised structures can be varied in a targeted manner. Fillers of this type are, in particular, hollow aluminum silicate beads, expanded hollow beads, soft-feel PU beads, micronized plastics, such as polypropylene or PTFE, and PE waxes.

Suitable colorants are, in particular, pigment preparations having pigment contents of from 15 to 75% by weight. The viscosity of the aqueous starting plastic composition, which depends on the desired height of the raised structures and on the type of applicator used, is less than 40000 mPa x s (25°C, spindle 64, 25 rpm, Brookfield).



The thickeners used are preferably associative thickeners, such as PU polyethers and, PU polyols. Also possible, however, are non-associative thickeners, those based on acrylate and other thickeners, such as modified bentonites.



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The invention is now explained in greater detail with reference to a working example which is shown in the attached drawing and with reference to composition examples for the plastic composition.

Fig. 1 shows a pencil having a wooden jacket 1 and a pencil lead 2. The pencil has a hexagonal contour. Nubs 4 project from the individual hexagon surfaces 3 essentially in the radial direction. Instead of nubs, other structures may be applied to the pencil surface, for example strip-like structures extending in the longitudinal direction of the pencil. It is also conceivable for the raised structure to extend around the pencil periphery in a ring shape. The raised structures or nubs 4 may be applied either to an uncolored wood surface or alternatively to a paint coat.

Some illustrative formulations for plastic compositions are now indicated below. The percentages relate to the plastic composition in the flowable, i.e. as yet unhardened, starting state. All percentages are percent by weight, unless stated otherwise.



Example 1:

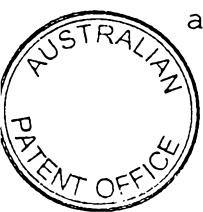
	Acrylate dispersion	55%
	Water	29.8%
	Pigment Blue 15:1, C.I. 74160	8%
5	(Luconyl G blue 6900; BASF AG)	
	Propylene glycol	5%
	Thickener: Rheolate 420	1.7%
	(RHEOX Europe NV/SA)	
	Surfactant: FC 171 (3M)	0.5%
10	Antifoam: Foamex N (Tego)	0.2%

The acrylate dispersion is composed of 15% by weight of STX-1532 and 40% of Joncryl 537. Both dispersions are marketed by Johnson. A plastic composition of this type was applied by
15 roller to three of the hexagon grip surfaces of a hexagonal pencil in a layer thickness of about 0.2 mm.

Example 2:

	Acrylate-styrene polymer dispersion	90%
20	Flow-control agent:	
	ethylene glycol monobutyl ether	4.8%
	Mica	3%
	Talc	2%
	Antifoam:	
25	Foamex N (Tego)	0.2%

The acrylate-styrene dispersion is a dispersion based on an modified anionic acrylate-styrene copolymer and is available from Zeneca under the name NeoCryl XK-70. A painted wooden
30 pencil was sprayed with the stated plastics composition over the full circumference on two-thirds of its length. This operation was repeated after drying each preceding layer. In this way, a grip zone having a thickness of about 0.5 mm was achieved. Instead of the spraying, the grip zone can also be



produced by dipping the pencil into the plastic composition with its front region. In order to achieve greater layer thicknesses, repeated dipping is advantageous.

5 Example 3:

Polyurethane dispersion 66%
Kaolin 20%
Pigment Yellow 74, C.I. 11741 6.4%
(Levanyl Yellow 5 GXLf (BAYER AG)

10 Dispersant and flow-control agent:

Sokalan PA 15 (BASF AG) 3.4%

Wetting agent:

Agitan 285 (Münzing-Chemie) 3%

Thickener:

15 Rheolate 205 (RHEOX Europe NV/SA) 0.6%

Antifoam:

T 4202 (Drew) 0.3%

Foamex N (Tego) 0.3%

20 A plastic composition of this type was applied in drop form to painted and unpainted pencils. After drying, nubs formed on the pencil surface. The viscosity and the parameters of the applicator were set in such a way that nubs having a diameter of about 1 mm under a nub height of up to 0.3 mm were

25 achieved.

Example 4:

Polymer dispersion 46%

Water 15%

30 Barium sulfate 13%

Pigment Red 112, C.I. 12370

(Sandospers Red E-GRS from Clariant AG) 10%

Further filler:

Propyltex 100 S (Micropowders Inc.) 8%



Flow-control agent:

Propylene glycol 5.8%

Thickener:

Rheolate 420 (RHEOX Europe NV/SA) 1%

5 Wetting agent:

Triton CF-10 (Union-Carbide Corp.) 1%

Antifoam:

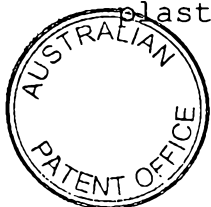
Foamex N (Tego) 0.2%

- 10 The above formulation is an example of a red plastic composition based on an aqueous, plasticizer-free, finely disperse copolymer dispersion comprising acrylates and styrene with a low residual monomer content. The plastic dispersion has a solids content of about 50% and a pH of from 6.5 to 8%.
- 15 The plastic composition was used to apply oval nubs to wood-gripped pencils through slit-shaped nozzles.



Claims

1. A wood-gripped pencil for writing, sketching, drawing and cosmetic purposes, from whose surface serving for handling project raised structures of a plastic material which form grip surfaces or grip nubs, these structures being applied in the form of an initially flowable plastic composition which later solidifies to form the raised structures, characterized in that the plastic composition comprises, as principal constituent, an aqueous polymer dispersion which hardens in a water-resistant manner or a mixture of such dispersions.
2. A pencil as claimed in claim 1, characterized by a polymer dispersion having at least one polymer or copolymer from the group consisting of polyurethane, polyacrylate, polystyrene, polyvinyl acetate and polyester-polyurethane.
3. A pencil as claimed in claim 1 or 2, characterized by a UV-crosslinkable polymer dispersion.
4. A pencil as claimed in one of claims 1 to 3, characterized in that the polymer dispersion comprises at least one thickener.
5. A pencil as claimed in one of claims 1 to 4, characterized in that the polymer dispersion comprises at least one filler.
6. A pencil as claimed in one of claims 1 to 5, characterized by a polymer dispersion having a solids content of from 30 to 65% by weight.
7. A pencil as claimed in claim 6, characterized in that the plastic composition in the unhardened starting state comprises



from 30 to 95% by weight of polymer dispersion and the remainder of fillers and auxiliaries.

8. A pencil as claimed in claim 7, characterized by the following composition (% by weight) of the unhardened plastic composition:

polymer dispersion 40 to 90%

filler 0 to 40%

auxiliaries remainder.



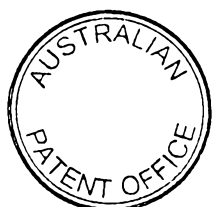
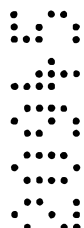
9. A wood-gripped pencil substantially as hereinbefore described with reference to the accompanying drawings.

Dated 17 February, 2003

5 **A.W. Faber-Castell Unternehmensverwaltung GmbH & Co.**

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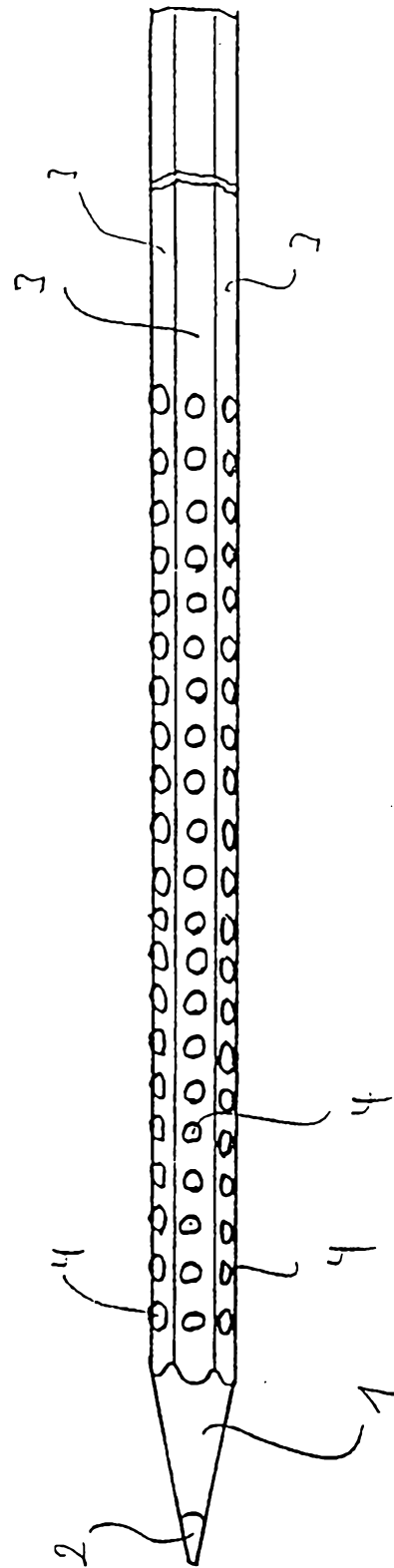


Fig. 1