(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 992 639 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.04.2000 Bulletin 2000/15

(51) Int. Cl.[7]: **E04F 15/12**

(21) Application number: **98203416.7**

(22) Date of filing: **09.10.1998**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(71) Applicant: **RA Industrigolv AB**
302 60 Halmstad (SE)

(72) Inventors:
- **Lindgren, Christer**
  310 42 Haverdal (SE)
- **Askfelt, Lars**
  302 39 Halmstad (SE)

(74) Representative:
Wallengren, Yngvar
Patentbyran Y Wallengren AB
Box 116
331 21 Värnamo (SE)

(54) Floor covering

(57) The disclosure relates to a floor covering. On the substrate (1), a layer of plastic-based bonding material (2) is laid. In this layer, a layer of a particulate material (3) is anchored. The particulate material (3) may have a particle size of between 1 and 15 mm, but most often between 3 and 10 mm. Above the particulate material (3), an upper layer (4) of inorganic material is laid so that the surface (5) of the floor covering becomes compact. Between the bonding material (2) and the upper layer (4), as well as between the particles in the particulate material (3), there are air pockets (6). The surface (5) of the floor covering is surface-ground and painted with a protective paint.

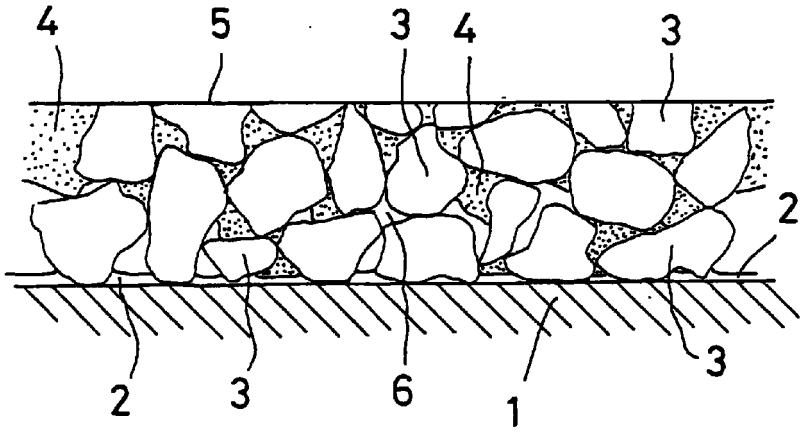

Fig 2

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Description

TECHNICAL FIELD

[0001] The present invention relates to a floor covering disposed on a substrate and comprising a layer or course of particulate material and means for at least partly filling out the interspaces between the individual pieces of particulate material, the particulate material and filler material being surface-ground so that both are exposed in the free surface of the floor.

BACKGROUND ART

[0002] A floor covering of approximately the above-outlined type is previously known from CH 361 114. This floor covering is applied on a porous concrete floor which has been waterproofed and insulated with a number of insulating layers. Above these layers, there is disposed a covering layer which is substantially based on a plastic binder. Further, particles are worked into the covering layer, whereafter, after complete curing, the upper surface of the floor covering is surface-ground.

[0003] A floor of this type may, in certain cases, function well but does not display a higher level of load bearing capacity and resistance to point loadings than is permitted by the actual plastic material in the covering layer. Furthermore, and this is most important, the costs of producing such a floor are so high that such a floor can hardly be put into practical use other than in exceptional cases.

[0004] A similar structure is also described in DE 1 509 879.

PROBLEM STRUCTURE

[0005] The present invention has for its object to design the floor covering described by way of introduction such that the drawbacks inherent in the prior art methods and technology are obviated. In particular, the present invention has for its object to realise a floor covering which has improved load bearing capacity, against extensive, dynamic and point loadings. Further, the present invention has for its object to realise a floor covering which may be manufactured at a highly competitive price and, in addition, a floor covering whose appearance may be varied within broad limits.

SOLUTION

[0006] The objects forming the basis of the present invention will be attained if the floor covering disclosed by way of introduction is characterized in that the filler includes a lower layer substantially consisting of plastic-based bonding material for anchoring the individual pieces of particulate material in the substrate, and an upper layer substantially consisting of inorganic material for realising a compact floor surface.

[0007] Further advantages will be attained according to the present invention if the floor covering is also given one or more of the characterizing features as set forth in appended subclaims 2 to 6.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWING

[0008] The present invention will now be described in greater detail hereinbelow with reference to the accompanying Drawing, in which:

Fig. 1 is a cross section through a partly ready-laid floor; and

Fig. 2 shows the same floor after completion.

DESCRIPTION OF PREFERRED EMBODIMENT

[0009] From the Figures, which show a cross section through a floor covering according to the present invention, it is apparent that the floor covering rests on a substrate 1. The substrate may, for example, be an extant concrete floor but can, according to the present invention, be of any optional nature. Above the substrate 1, the floor covering includes a layer 2 of substantially plastic-based bonding material which is employed for anchoring pieces 3 of a particulate material in the substrate 1. Further, the floor covering includes an upper layer 4 substantially consisting of inorganic material for realising a compact surface on the floor covering.

[0010] In Fig. 1, the floor covering is shown as it appears after the application of the above-considered layers. It will be apparent from the Figure that both the pieces 3 of particulate material and the upper layer 4 form an upper and uneven defining surface of the floor covering. In order to achieve a final and aesthetically appealing appearance, both the pieces 3 of particulate material and the exposed portions of the upper layer 4 are surface-ground to smoothness so that the floor covering displays the upper, planar surface 5 as shown in Fig. 2. After the surface grinding operation, the upper surface of the floor covering can suitably be protective-painted with a two can coating.

[0011] The lower layer 2 of bonding compound has, in the illustrated embodiment, a thickness of from one or a few tenths of a millimetre up to a couple or three millimetres, suitably of the order of magnitude of 1-2 mm. In order to form a floor covering with greater mechanical strength, it is an advantage if the bonding material can be applied in such a manner that it forms bridges between the individual pieces 3 of particulate material. For example, this may be achieved in that a slightly thicker layer of bonding material is applied, whereafter the particulate material is spread out and "stirred about" in the as yet uncured bonding material so that the above-mentioned bridges or bond unions between the

pieces are formed. Another variation for realising such bridges or bonds between the individual pieces 3 could be to pre-treat them with bonding material before they are spread and levelled out over the substrate 1.

[0012] Depending on the quality and cleanness of the substrate 1, it may possibly be necessary to use a primer to improve bonding of the bonding material 2 to the substrate 1.

[0013] A bonding material which has proved to function very well in practice is an epoxy resin which is manufactured by Perstorp Bygghartser and is sold under the brand name Peran Rustik.

[0014] It will further be apparent from the Figures that there may be - or are - air pockets 6 between the individual pieces 3 of particulate material and different free surfaces of the upper layer 4. If the quantity of such air pockets is increased, the bearing capacity of the floor will naturally be reduced, at the same time as the costs of producing the floor are reduced. The quantity of material which is employed in the upper layer may be regulated in such a manner, and also the penetration of the material between the individual pieces 3 of particulate material, that the final result will be a floor which is adapted to the requirements applicable at the time. The crucial factor is only that the upper layer 4 is made homogeneous and fully covering within the region which is to be ground down to the planar surface 5 and the region just beneath it.

[0015] In one embodiment in which the majority of the individual pieces 3 of particulate material are interconnected to one another via bridges or bonds of bonding material 2, the particulate material forms a three-dimensional lattice structure which in itself displays extremely high load bearing capacity. In this embodiment, the number of air pockets 6 may be considerably greater than is shown in the Figures.

[0016] The upper layer 4 is a substantially cement-based filler or compound with inorganic aggregate material. By way of example of a commercially available preparation which has proved to be advantageous in this context, mention might be made of a screeding compound which is sold under the designation UZIN-NC 170.

[0017] As regards the particulate material 3, this may consist of a masonry material of different qualities, marble, crushed ceramics, etc. The particle size need not be calibrated, but should lie in the order of magnitude of 1-15 mm. However, the particle size preferably lies in the mixed range of 3-10 mm. Further, the individual pieces are irregular in configuration and thereby afford good adhesion both to the bonding material 2 and to the screeding compound which is employed in the upper layer 4.

[0018] The protective painting or top painting which is carried out on the planar surface 5 may suitably be put into effect employing a water-based two can paint which is marketed under the commercial brand name NM Topplack 92 Express.

[0019] The present invention may be modified without departing from the scope of the appended Claims.

Claims

1. A floor covering disposed on a substrate (1) and comprising a layer or course of particulate material (3) and means for at least partly filling out the interspaces between the individual pieces of particulate material, the particulate material and filler material being surface-ground so that both are exposed in the free surface (5) of the floor covering, **characterized in that** the filler includes a lower layer substantially consisting of plastic-based bonding material (2) for anchoring the individual pieces of particulate material (3) in the substrate (1), and an upper layer (4) substantially consisting of inorganic material for realising a compact surface (5) on the floor covering.

2. The floor covering as claimed in Claim 1, **characterized in that** the upper layer (4) is a substantially cement-based filler or compound with inorganic aggregate material.

3. The floor covering as claimed in Claim 1 or 2, **characterized in that** the particulate material (3) has a particle size in the range of between 1 and 15 mm.

4. The floor covering as claimed in Claim 3, **characterized in that** the particulate material (3) has particle sizes in the range of between 3 and 10 mm.

5. The floor covering as claimed in any of Claims 1 to 4, **characterized in that** there are air pockets (6) between the lower layer (2) and the upper layer (4) and possibly also within this layer, and between the individual pieces of particulate material (3).

6. The floor covering as claimed in any of Claims 1 to 5, **characterized in that** the plastic-based bonding material (2) is applied so as to form bridges between and interconnecting the individual pieces of particulate material (3).

7. The floor covering as claimed in any of Claims 1 to 6, **characterized in that** the upper, surface-ground surface (5) of the floor covering displays a protective paint.

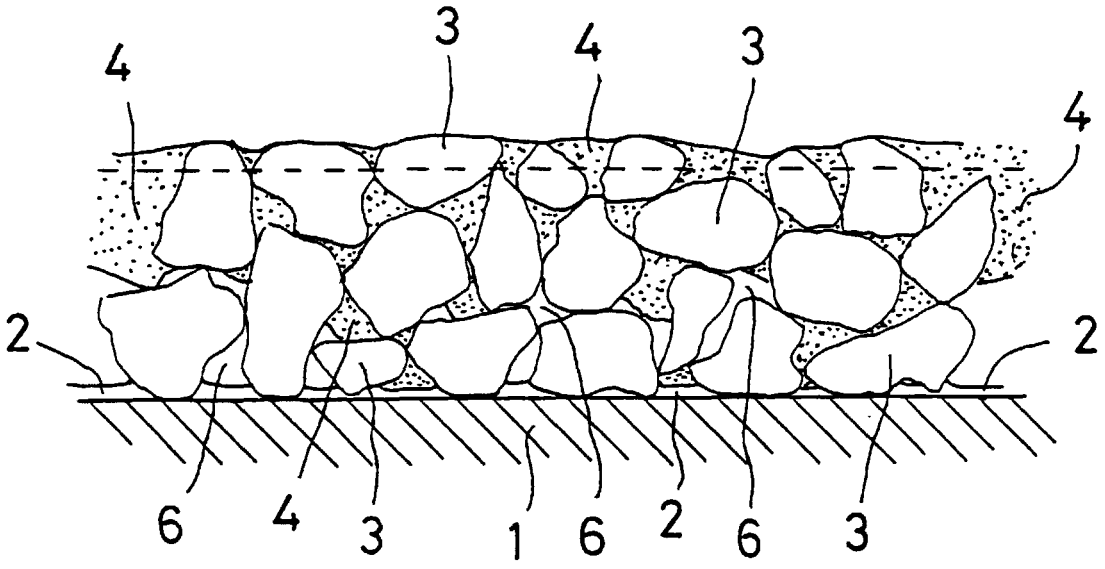

Fig 1

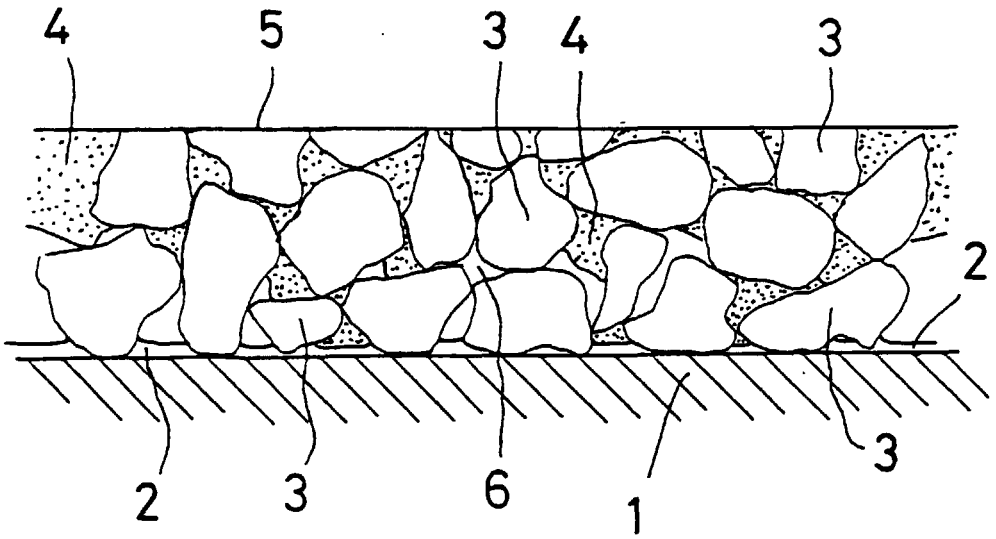

Fig 2

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 20 3416

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.6)
A	EP 0 737 787 A (BEKAERT SA NV) 16 October 1996 * column 3, line 35 - column 7, line 35 *	1,2,4-6	E04F15/12
D,A	CH 361 114 A (DIETHELM & CO.) 15 May 1962 * page 2, line 1 - page 4, line 20; figure *	1-3,7	
D,A	DE 15 09 879 A (SCHAEFER) 22 May 1969 * page 4, line 9 - page 7, line 18; figure *	1,3,4,6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E04F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	7 January 1999	Ayiter, J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 98 20 3416

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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07-01-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0737787 A	16-10-1996	BE 1009314 A	04-02-1997
CH 361114 A		NONE	
DE 1509879 A	22-05-1969	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82