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(54) **Tool for surface roughing, in particular for flooring**

Werkzeug zur Oberflächenaufrauhung von Fussböden

Outil de surfacage des sols

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Description

[0001] The present invention discloses a tool for surface roughing, in particular for flooring, of the type consisting of a support to be applied to a machine and of a layer made of an abrasive material fixed to such support, where the abrasive member consists of several diamond sectors fitted onto said support and buried into a mass of soft material, especially rubber.

[0002] This configuration allows obtaining a tool capable of effectively machining the surface, performing an effective abrasive action without having these sectors damage the edges of ceramic or similar tiles.

[0003] In practice, the mass of soft material where the diamond sectors are buried serves as a protection to prevent them from scratching the edges of the tiles or slabs forming the flooring, but allowing the diamond to scrape the surface quite deeply.

[0004] The invention relates to the field of equipment for surface finishing tools, and in particular it relates to equipment for finishing flooring and the like.

[0005] As known, once the flooring has been laid, it requires levelling so as to complete finishing with a polishing operation, where required.

[0006] The machines used to this purpose are provided with a rotating member to which tools such as abrasive grinders or the like are applied, and which are placed into rotation laying against the material to be machined to perform roughing, smoothing and polishing.

[0007] Generally, these machines comprise a frame mounted on wheels, and an electric motor that actuates a rotor with substantially vertical axis, to which a plate supporting several tools is applied.

[0008] The tools consist of sectors made of an abrasive material, according to the type of finish to obtain.

[0009] For roughing operations, as said, large grain abrasive sectors are used, capable of removing a certain amount of material from the flooring, so as to level and smooth it.

[0010] These tools may exhibit a continuous surface, for example consisting of a plane disc or grain with circular crown, or of a series of sectors mounted one next to the other, onto a generally circular support.

[0011] However, the tools consisting of more sectors sometimes exhibit disadvantages since if the operation is performed on a flooring consisting of tiles, stone slabs or the like, the sectors that rotate and strike against the edges of protruding tiles may chip or damage them.

[0012] This risk does not exist or is very limited with continuous-surface tools, such as round ones, which however exert a less effective action on the flooring, thereby requiring longer operating times to achieve the same results.

[0013] WO-A-96 26811 describes a flexible abrasive member with permanent one way mould, and a method for making the same, said abrasive member having a support provided, at one side, with an attachment, and at the other side, with an abrasive tool consisting of a series of sectors and of a one way mould, made of flexible foam material, encircling the sectors and extending along at least part of their height. No intermediate layer of deformable material is provided in this tool, between the support and the sectors.

[0014] The present invention provides a tool for roughing surfaces and flooring, of the type consisting of a support to be fitted on a finishing machine, wherein several sectors, consisting of grains made of an abrasive material mixed with a binder, are welded to a grid-shaped support or to a drilled support, the whole being buried into a layer of soft material, **characterised in that** between said grid-shaped support or said drilled support and said support to be fitted to the machine, it is provided a layer of soft material, in particular vulcanised rubber. The tool is capable of solving the problems mentioned above and consists of several diamond sectors fixed to a yielding support and buried into a layer of soft material, for example rubber and the like, which prevents the sectors from hitting against edges and corners of tiles, but which allows an effective surface roughing action, thanks to its elasticity and deformability features.

[0015] The present invention will now be described by way of a non-limiting example with reference to the attached figures, where:

- Figure 1 is a perspective view of the diamond sectors and of the relevant support in a tool according to the invention;
- Figure 2 is a perspective view of the complete tool;
- Figure 3 is an exploded view of the tool of figure 2;
- Figure 4 is a section of the tool of the previous figures.

[0016] With reference to the attached figures, the tool according to the invention comprises a support 1 suitable to be applied to a roughing/smoothing/polishing machine, an intermediate layer 2, and a tool, globally indicated with reference numeral 3, consisting of a support 4 to which several abrasive sectors 5 are fixed.

[0017] Support 1, made of a resistant material provided with couplings for the application to a machine not shown in the figure, is made of metal, preferably of aluminium.

[0018] The intermediate layer 2, according to the invention, consists of a layer of deformable material, in particular vulcanised rubber, applied to support 1 by a layer of anchoring material, schematically shown in the figure and indicated with reference numeral 6.

[0019] The purpose of such intermediate layer, made of soft and deformable material, is to allow the tool to slightly bend or, in any case, to follow and adjust to the unevenness of the surface to be smoothed.

[0020] On the other hand, the active part of the tool consists of several sectors made of an abrasive material 5, preferably arranged as dial and fixed to a support made of resistant material sufficiently flexible to follow the deformation of the intermediate layer of vulcanised rubber.

[0021] Preferably, such support layer consists of a grid or a drilled plate or the like, to which sectors 5 are welded.

[0022] Sectors 5 consist of an abrasive material, preferably diamond powder mixed with a metal binder, preferably a bronze- or cobalt-based alloy.

[0023] The support layer 4 must be shaped as a grid or drilled since, according to a feature of the invention, the diamond sectors 5 are embedded into a layer made of a soft and deformable material, preferably a vulcanised rubber layer, which is then applied and made to adhere to the intermediate vulcanised rubber layer 2.

[0024] The holes in the support plate 4 are therefore intended to allow this material to move to the opposite side and totally incorporate the support plate with the abrasive sectors.

[0025] Once assembled, the tool as a whole is as shown in figures 2 and 4.

[0026] The sizes and amounts of diamond powder contained in the alloy may change based on the type of operation required.

[0027] The Applicant has carried out several experiments and has proved that good results are obtained with sectors comprising approximately 50% of diamond powder with size ranging between 3 and 10 mm and 50% of bronze alloy.

[0028] The sectors produced had plan dimensions of 24 x 10 millimetres and a height of 10 millimetres, and they were welded to a support consisting of a plate with an approximate thickness of 2 mm.

[0029] Obviously, these indication are only provided by way of an example and for completeness of description, but a man skilled in the art will easily find the most appropriate parameters for the type of operation to perform.

[0030] This tool was applied to an aluminium support with a vulcanised rubber layer with a thickness from 4 to 6 millimetres arranged in between.

[0031] As already mentioned above, the tool according to the invention is especially convenient to use since there is no risk of chipping floor coating tiles, as the hollow space between a pair of close sectors is filled with soft material, in particular vulcanised rubber, which has the dual function of totally filling the gaps between diamond sectors, thereby preventing them from hitting and damaging the side edge of tiles during rotation, and of serving as deformable support that allows the tool to tilt and adapt to any unevenness existing on the material to be smoothed.

[0032] It is understood that sizes, as well as materials used, can change according to the use requirements.

Claims

1. Tool for roughing surfaces and flooring, of the type consisting of a support (1) to be fitted on a finishing machine, wherein several sectors (5), consisting of grains made of an abrasive material mixed with a binder, are welded to a grid-shaped support or to a drilled support (4), the whole being buried into a layer of soft material, **characterised in that** between said grid-shaped support or said drilled support (4) and said support (1) to be fitted to the machine, it is provided a layer (2) of soft material, in particular vulcanised rubber.

2. Tool according to claim 1, **characterised in that** said sectors (5) consist of grains of abrasive material, in particular diamond powder, in a metal binder.

3. Tool according to claim 2, **characterised in that** said metal binder is a bronze-based binder.

4. Tool according to claim 2, **characterised in that** said metal binder is a cobalt-based binder.

Patentansprüche

1. Werkzeug zum Aufrauhen von Oberflächen und Bodenbelägen, von der Art, die einen Träger (1) zur Anbringung an einer Schleifmaschine umfasst, wobei mehrere Sektoren (5), die aus Körnern eines abrasiven Materials gemischt mit einem Bindemittel bestehen, mit einem gitterförmigen oder gelochten Träger (4) verschweißt sind und als Ganzes in einer Schicht aus einem weichen Material aufgenommen sind, **dadurch gekennzeichnet, dass** zwischen dem gitterförmigen oder gelochten Träger (4) und dem zur Anbringung an der Schleifmaschine ausgebildeten Träger (1) eine Schicht (2) aus einem weichen Material, insbesondere vulkanisiertem Gummi, angeordnet ist.

2. Werkzeug nach Anspruch 1, **dadurch gekennzeichnet, dass** die Sektoren (5) aus Körnern eines abrasiven Materials, insbesondere Diamantpulver, in einem metallischen Bindemittel bestehen.

3. Werkzeug nach Anspruch 2, **dadurch gekennzeichnet, dass** das metallische Bindemittel ein bronzebasiertes Bindemittel ist.

4. Werkzeug nach Anspruch 2, **dadurch gekennzeichnet, dass** das metallische Bindemittel ein kobaltbasiertes Bindemittel ist.

Revendications

1. Outil de rectification de surfaces et de sols, du type constitué d'un support (1) à monter sur une finisseuse, dans lequel plusieurs secteurs (5), constitués de grains de matière abrasive mélangés à un liant, sont soudés à un support en forme de grille ou à un support perforé (4), l'ensemble étant noyé dans une couche de matière souple, **caractérisé en ce que**, entre ledit support en forme de grille ou ledit support per-

foré (4) et ledit support (1) à monter sur la finisseuse, il est prévu une couche (2) de matière molle, notamment du caoutchouc vulcanisé.

2. Outil selon la revendication 1, **caractérisé en ce que** lesdits secteurs (5) sont constitués de grains de matière abrasive, notamment de la poudre de diamant, dans un liant métallique.

3. Outil selon la revendication 2, **caractérisé en ce que** ledit liant métallique est un liant à base de bronze.

4. Outil selon la revendication 2, **caractérisé en ce que** ledit liant métallique est un liant à base de cobalt.

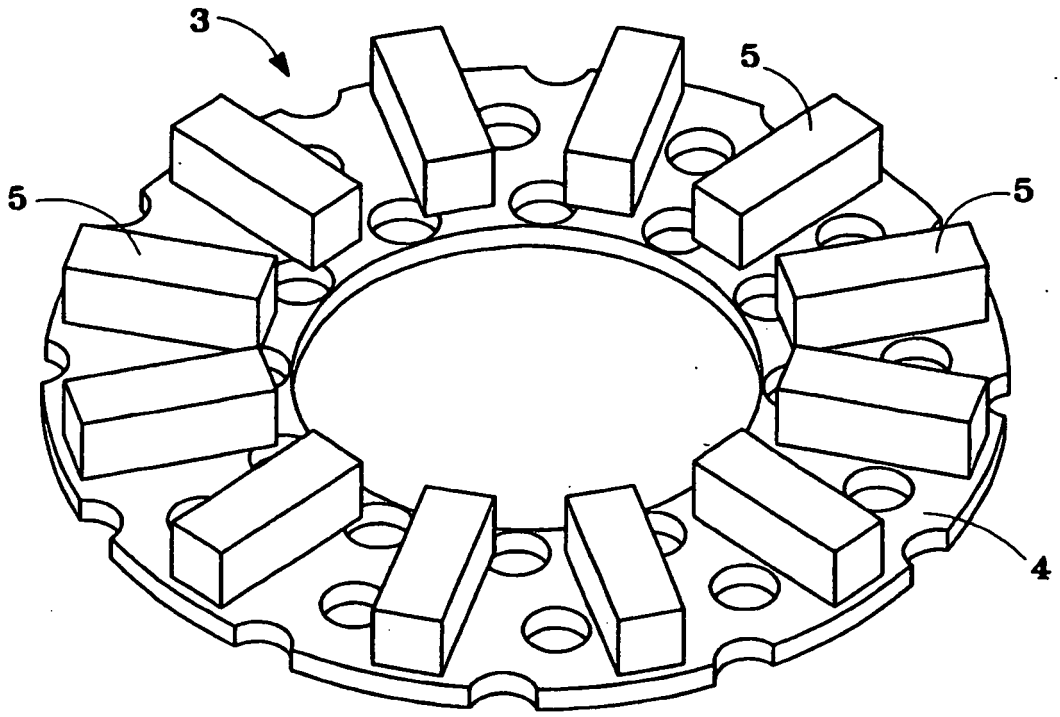


Fig. 1

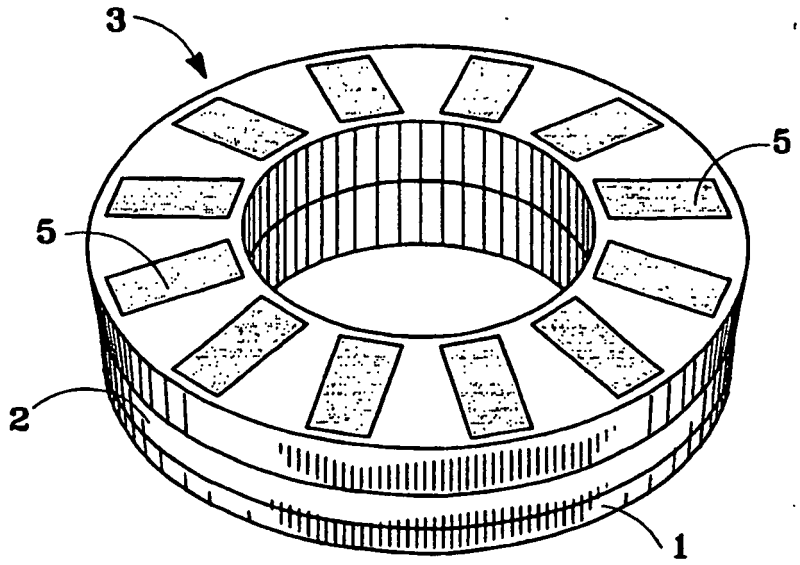


Fig. 2

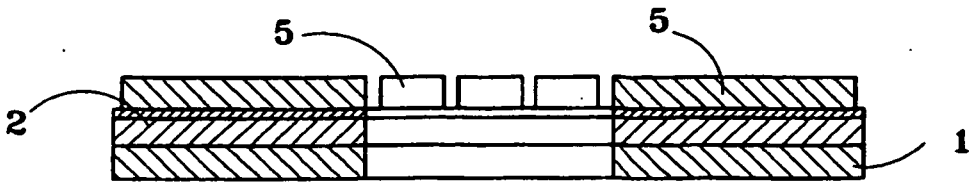


Fig. 4

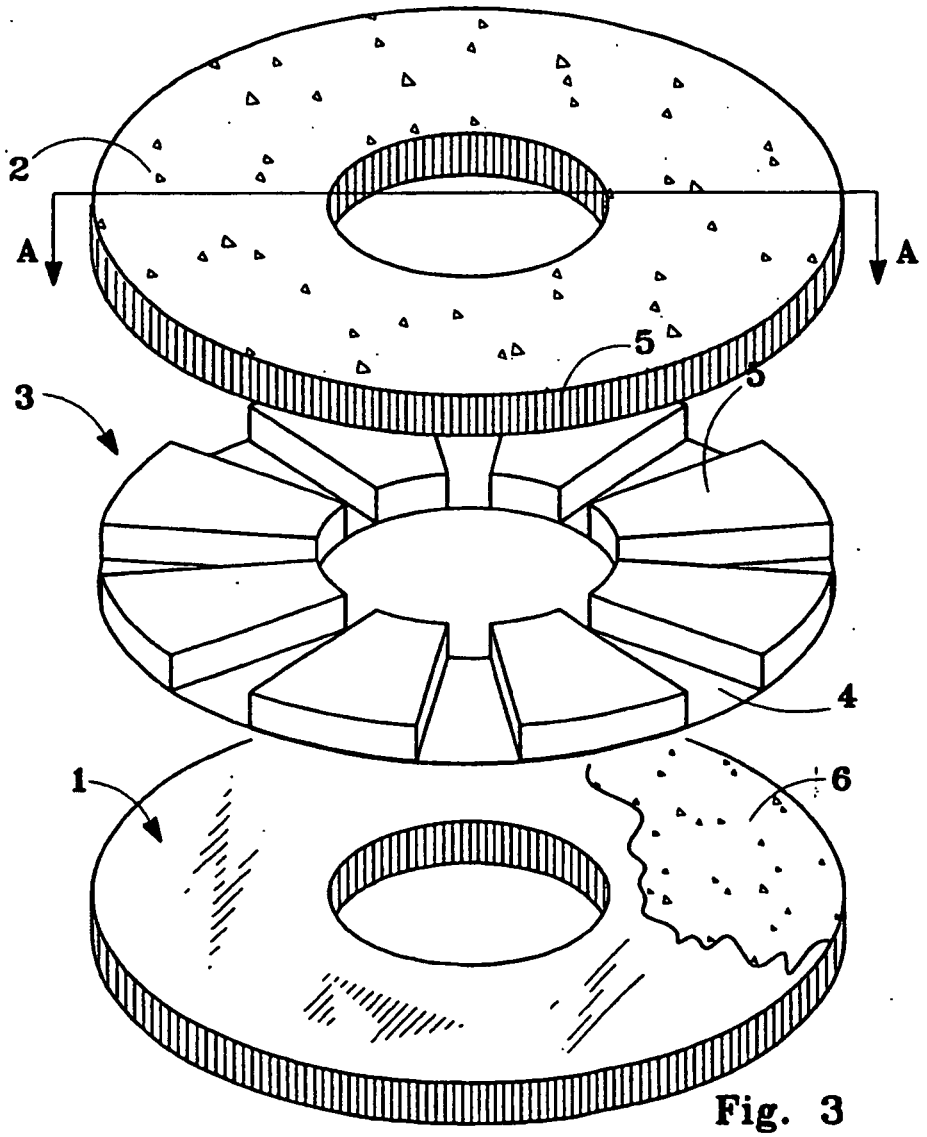


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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