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(54) **Grinding wheel**

(57) Grinding wheel for a floor grinding machine, comprising a metal wheel (1) with a first and a second flat surface. Diamond-containing grinding elements (11,

12) are arranged on the first flat surface. Grinding elements (11, 12), preferably diamond-containing, are also arranged on the second flat surface of the wheel (1).

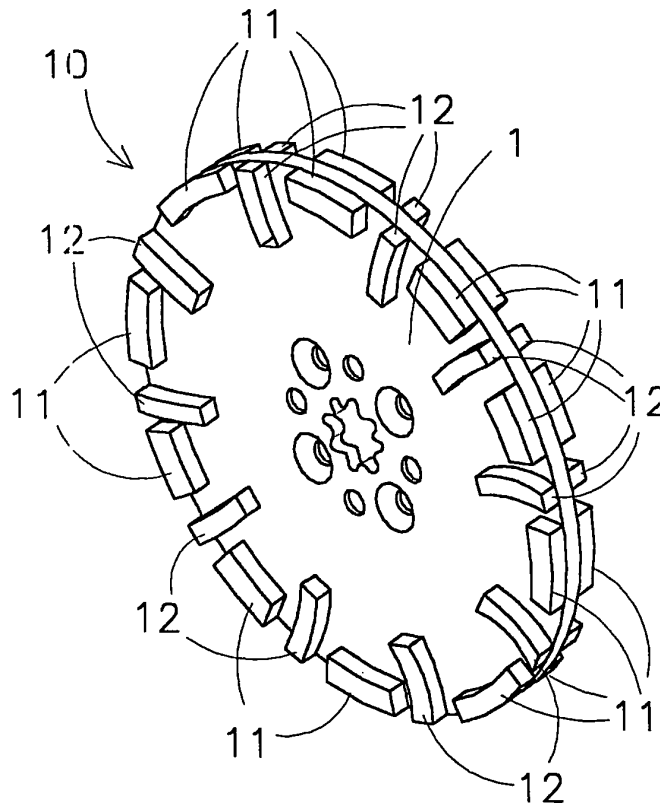


Fig 4

Description

[0001] The invention relates to a grinding wheel according to the preamble of claim 1.

[0002] A grinding wheel of this type is known from US 3,745,719. The known grinding wheel comprises a metal wheel with one surface on which a plurality of rectangular diamond-containing grinding elements are arranged. The known grinding wheel therefore has a single grinding side.

[0003] It is an object of the invention to provide a grinding wheel which makes more efficient use of materials.

[0004] This object is achieved by a grinding wheel according to the preamble of claim 1, characterized in that grinding elements are also arranged on the second flat surface of the wheel.

[0005] The grinding wheel according to the invention has two grinding sides and lasts as long as two grinding wheels which can only be used on one side and the respective grinding sides of which correspond to the grinding sides of the grinding wheel according to the invention. Since the materials and manufacturing costs of the metal wheel represent a considerable proportion of the total cost price of a grinding wheel and according to the invention just one metal wheel is required to achieve the same service life as two of the known single-sided grinding wheels, the grinding wheel according to the invention is therefore in relative terms less expensive.

[0006] It is preferable for the grinding elements on the first and second flat surfaces of the wheel to have different grinding actions. As a result, a single wheel can be used to treat different floor surfaces. By way of example, a soft floor surface can be ground using grinding elements with a very hard diamond-steel compound on one side of the wheel, while a harder floor surface can be ground using grinding elements with a less hard diamond-steel compound on the other side of the wheel. This makes the grinding wheel according to the invention versatile to use.

[0007] It is preferable for all the grinding elements to be of the same shape. This further limits the production costs of the grinding wheel.

[0008] The invention will be explained in more detail with reference to the drawing, in which:

Fig. 1 shows a perspective view of a metal wheel for a grinding wheel according to the invention,

Fig. 2 shows a front view of the metal wheel from Fig. 1,

Fig. 3 shows a cross section through the wheel on line A-A in Fig. 2,

Fig. 4 shows a perspective view of a preferred embodiment of a grinding wheel according to the invention, and

Fig. 5 shows a front view of the grinding wheel from Fig. 4.

[0009] Figs. 1 - 3 show a circular metal, preferably steel, wheel 1 with a first side 1a and a second side 1b. According to a preferred embodiment, the wheel 1 is approximately 8 mm thick and its diameter is approximately 250 mm. The wheel 1 has a central opening 2, in this example with a wavy edge 3, in the middle. The central opening 2 in the wheel 1 is preferably formed by means of laser cutting. The circumference of the opening 2 is in this case described by a laser beam so that the central part of the wheel 1 is cut out. The central opening 2 is used to couple the wheel 1 to a coupling part (not shown) of a drive shaft of a grinding machine. The coupling part (not shown) comprises toothing which is of a complementary shape to the circumferential shape of the central hole 2.

[0010] Four first securing holes 4 and four second securing holes 5 with a diameter of preferably about 11 mm are arranged on an imaginary circle around the central opening 2. The first securing holes 4 and second securing holes 5 are located alternately around the circle. The securing holes 4 and 5 each have a conical section 4a and 5a, respectively, the diameter of the conical section 4a and 5a being approximately 22 mm at the wheel surface 1a or 1b, respectively.

[0011] During use, bolts or other securing means pass through the first securing holes 4 if the first side 1a of the wheel 1 faces towards the surface to be ground. In this case, the head of the bolt or the like, in this first fitted state, is recessed into the conical part 4a, below the surface 1a. The second securing holes 5 are not used in this first fitted state.

[0012] When the wheel 1 is turned over in order for the opposite side to be fitted to the grinding machine, bolts or the like are also passed through the securing holes 5, with the head of the bolts once again being recessed within the conical section 5a. In this second fitted state, the securing holes 4 are not used.

[0013] Fig. 4 shows a preferred embodiment of a grinding wheel 10 according to the invention. The grinding wheel 10 comprises a metal wheel 1 as described above with reference to Figs. 1 - 3. Elongate, curved grinding elements 11 which extend substantially in the tangential direction are arranged at the edge of the metal wheel 1, on both sides 1a and 1b of the wheel. The radius of curvature of the radially outermost surface of the grinding elements 11 corresponds to the radius of curvature of the outer circumference of the wheel 1.

[0014] Furthermore, curved elongate grinding elements 12 which extend substantially in the radial direction of the wheel 1 are arranged on both sides 1a and 1b of the wheel 1. One of the end edges of the grinding elements 12 is located at or close to the outer circumference of the circular wheel 1. The radially arranged grinding elements 12 on the first side 1a and on the second side 1b have their concave sides facing in opposite directions,

as will be clear from Fig. 5.

[0015] In the example shown, the tangentially and radially arranged grinding elements 11 and 12 are identical in form, which limits the manufacturing costs of the grinding elements and therefore the cost price of the grinding wheel 10. The grinding surface of the grinding elements 11 and 12 lies approximately 10 mm above the surface of the wheel 1 on which they are arranged, i.e. the first side 1a or the second side 1b.

[0016] The grinding elements 11 and 12 are preferably made from a diamond-containing diamond-steel compound. It is possible for the grinding elements 11 and 12 which are arranged on one side 1a of the wheel 1 to be made from a different compound from the grinding elements 11, 12 which are arranged on the second side 1b of the wheel 1. This makes it possible to produce a grinding wheel 10 with different grinding actions on each side. It is also possible for diamond-containing grinding elements 11, 12 to be arranged on one side 1a, while grinding elements 11, 12 made from a compound which does not contain diamonds are arranged on the other side 1b.

[0017] It is preferable for the grinding elements 11 and 12 to be welded to the wheel 1, but other suitable joining methods are of course also possible.

[0018] It should be noted that in the embodiment shown a central opening 2 with a wavy shape is formed in the grinding wheel 10, but any other suitable shape of hole, for example circular or square, is also fundamentally possible.

Claims

1. Grinding wheel for a floor grinding machine, comprising a metal wheel with a first and a second flat surface, diamond-containing grinding elements being arranged on the first flat surface, **characterized in that** grinding elements are also arranged on the second flat surface of the wheel.
2. Grinding wheel according to claim 1, **characterized in that** the grinding elements on the first and second flat surfaces of the wheel have different grinding actions.
3. Grinding wheel according to claim 1 or 2, **characterized in that** the grinding elements arranged on the second flat surface are diamond-containing.
4. Grinding wheel according to one of the preceding claims, **characterized in that** the wheel is substantially circular.
5. Grinding wheel according to one of the preceding claims, **characterized in that** at least some of the grinding elements are arranged at or close to the circumferential edge of the wheel.
6. Grinding wheel according to one of the preceding claims, **characterized in that** the grinding elements are welded to the wheel.
7. Grinding wheel according to one of the preceding claims, **characterized in that** the grinding elements are elongate in form.
8. Grinding wheel according to claim 7, **characterized in that** at least some of the grinding elements extend substantially in the tangential direction.
9. Grinding wheel according to claim 7, **characterized in that** at least some of the grinding elements extend substantially in the radial direction.
10. Grinding wheel according to claims 8 and 9, **characterized in that** the grinding elements which extend in the tangential direction and the grinding elements which extend in the radial direction are arranged alternately in the vicinity of the circumferential edge of the grinding wheel.
11. Grinding wheel according to claim 8, **characterized in that** the tangentially extending grinding elements are curved.
12. Grinding wheel according to claim 9, **characterized in that** the radially extending grinding elements are curved.
13. Grinding wheel according to one of the preceding claims, **characterized in that** all the grinding elements are of the same shape.
14. Grinding wheel according to one of the preceding claims, **characterized in that** the diamond-containing grinding elements comprise a diamond-steel compound.
15. Grinding wheel according to one of the preceding claims, **characterized in that** the wheel is provided with a central opening for coupling to a drive shaft of the grinding machine.
16. Grinding wheel according to claim 15, **characterized in that** the central opening is delimited by an edge which is wavy in form.
17. Grinding wheel according to claim 15 or 16, **characterized in that** the central opening is formed by laser cutting.
18. Grinding wheel according to one of the preceding claims, **characterized in that** securing holes for securing means to fit through are arranged in the wheel, the holes being formed in such a manner that the head of the securing means, in the fitted state, is

recessed below the level of the surface of the wheel.

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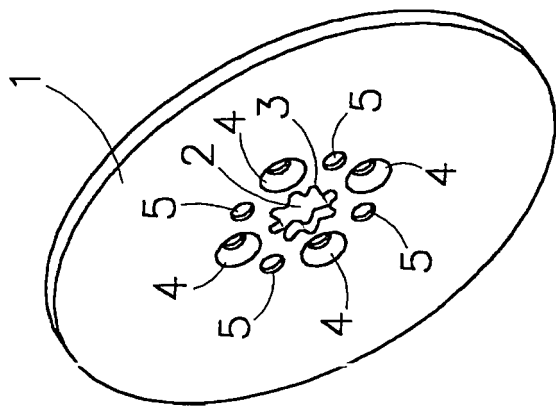


Fig 1

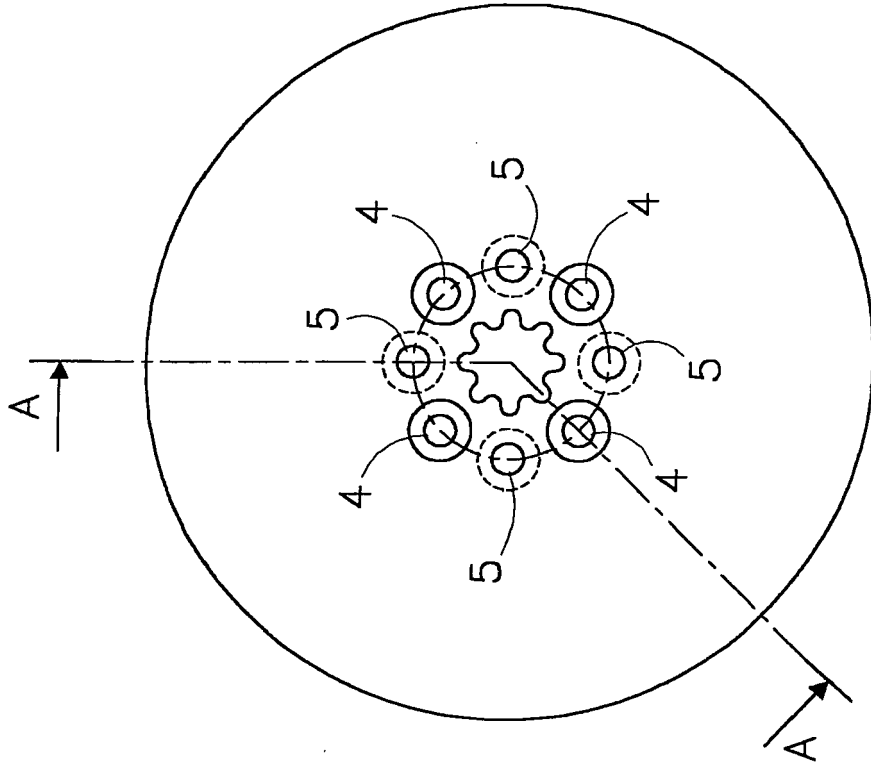


Fig 2

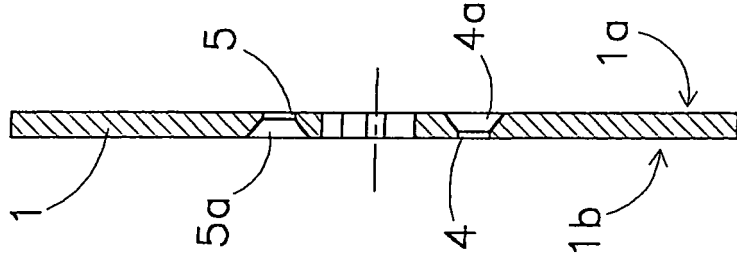


Fig 3

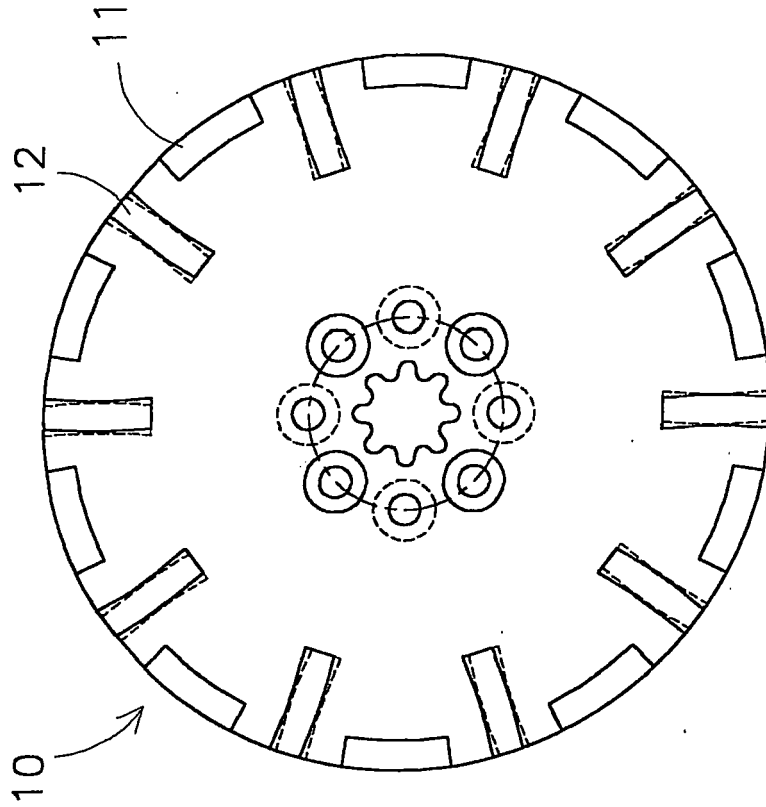


Fig 5

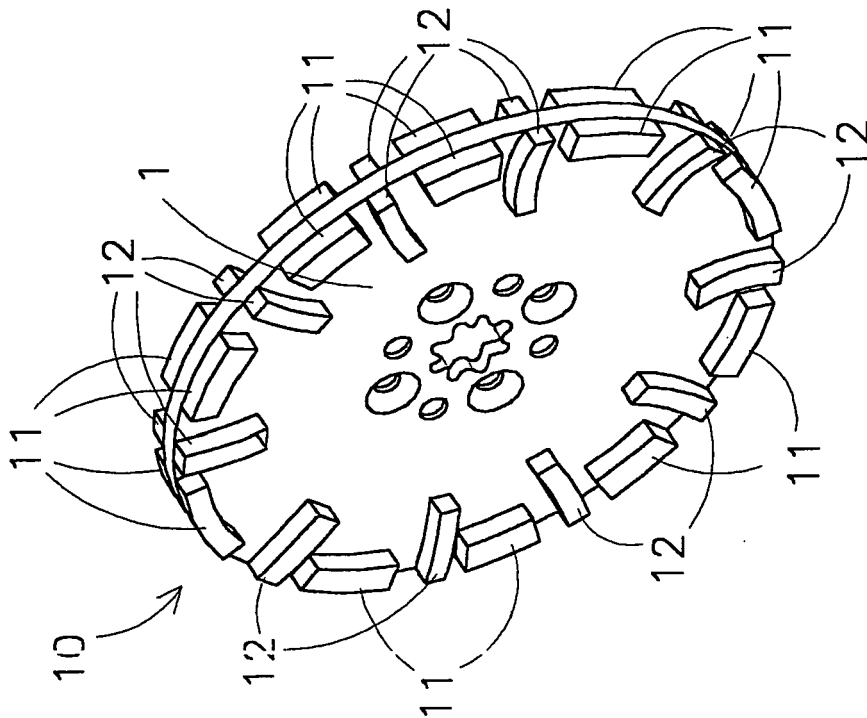


Fig 4



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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 11 May 2006	Examiner Sluimer, P
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	

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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 05 07 7876

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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