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

(11) Publication number: **0 059 360**
A2

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **82101102.0**

(22) Date of filing: **15.02.82**

(51) Int. Cl.³: **B 24 D 7/06**

(30) Priority: **26.02.81 IT 4001481**

(43) Date of publication of application:
08.09.82 Bulletin 82/36

(84) Designated Contracting States:
DE FR GB SE

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(54) **Tool bit for marble, granite, and the like slab and dalle dressing machines.**

(57) The tool bit for marble, granite, and the like slab and dalle dressing machines, comprises a plurality of small plates (13) of an abrasive material which are applied cantilever-fashion on the bottom face of a metal backing dish (14) adapted for mounting rigid with the machine own drive for rotation therewith.

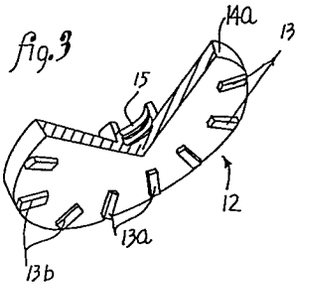

fig. 3

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Croydon Printing Company Ltd.

This invention relates to a tool bit for marble, granite and the like slab and dressing machines. The invention is suitable for use on dressing machines employed in the marble, granite, and the like industry, and on machines for floor dressing.

For dressing granite, it is current practice to employ machines wherein the surface working tools comprise a plurality of disk-like grinding wheels which are mounted at the bottoms of respective planets of a planetary system incorporated to the machine drive.

With marble dressing machines, the grinding wheels are mounted on a single rotatively driven plate, and in this particular case the grinding wheels, while having a similar composition, have different shapes and grains from those utilized for granite dressing.

It is a known fact that at the present stage of the art, the dressing of marble, granite, and the like surfaces is an extremely complex and costly operation, mainly due to the disadvantageous features of the tool bits of the machines employed.

In fact, an effective dressing of the surfaces involves a high number of passes for each of the roughing, dressing, and polishing steps.

In the course of the above process, the grinding wheels, or abrasive wheels, have to be frequently replaced because of their fast wearing properties, and within the span of the same work day an operator has to be provided with a number of spares, as well as a large variety of different grain wheels.

It should be also noted that the grinding wheels are presently cemented directly to metal heads adapted to be threaded onto the respective planets of the machine; thus, in addition to the job costs being significantly affected by the grinding wheel wear, further labour costs are introduced for preparing such heads, which have to be freed of any residue of the worn out wheel and made ready to accept a fresh grinding wheel.

Another disadvantageous feature of conventional grinding wheels is that the material from which the wheels are formed is affected by such environmental factors as moisture and ageing. Thus, it occurs that grinding wheels having the same composition and grain may wear in different degrees, depending on the surface hardness thereof, as determined by their ageing or the environment humidity; some wheels may tend to break, while others may be wholly ineffective on account of their excessively high surface hardness.

Accordingly the task of this invention to obviate the shortcomings exhibited by prior dressing machines, and in particular, to improve the working potential of such traditional machines by decreasing the working times and the number of passes required to perform the roughing, dressing and polishing steps.

Within this task it is an object of the invention to provide a tool bit for such machines which, besides exerting an improved abrasive action, also exhibits high wear resisting properties, whereby it can provide longer service life features.

A further object of this invention is to provide

conventional dressing machines with a tool bit which is simple to manufacture, easily and quickly mounted and replaced, and of comparatively low cost.

The aforesaid task and objects are all achieved by a tool bit for marble, granite, and the like slab and dalle dressing machines, characterized in that it comprises a plurality of small abrasive material plates associated in cantilever relationship to the bottom face of a metal backing disk, said disk being adapted to be mounted rigid with the machine own drive for rotation therewith.

Further details and features will be more clearly understood from the following detailed description of a preferred, but not limitative, embodiment of a tool bit for marble, granite, and the like slab and dalle dressing machines, with reference to the accompanying illustrative drawings, where:

Figure 1 is a diagramatic side view of a machine for floor dressing;

Figure 2 is a sectional view of a conventional tool bit for a granite dressing machine;

Figure 3 is a perspective view of the tool bit according to this invention;

Figure 4 is a plan view of a modified embodiment of a tool bit according to the invention; and

Figure 5 is a plan view of a tool bit according to the invention, intended for a marble dressing machine.

With particular reference to the drawing figures,

there is indicated at 1 a floor dressing machine. The machine 1 includes a machine body 2 which is provided, at the rear thereof, with wheels 3, whereby the machine 1 can be moved across a surface 4 to be dressed with a number of passes.

The front end of the machine 1 is caused to bear onto the surface 4 through a power driven tool holder assembly 5.

On marble dressing machines, the assembly 5 would be a plate 6 driven to rotate about an axis A. The plate 6 is provided at the bottom with a rim 7 defining a step 7a, and includes a set of three (or six) spurs 8 which are effective to hold tightly against the rim 7 and entrain rigidly with the plate 6 a set of shaped grinders 9 of a traditional type. The grinders 9 are schematically represented in Figure 5 with dash-and-dot lines.

In the case of granite dressing machines, the assembly 5 would comprise a planetary system driving respective planets, whereto heads 10 are threadably engaged which carry, depending therefrom, a disk-like grinder 11 of conventional design, as shown schematically in Figure 2. The reference numeral 12 designates a tool bit which, in accordance with this invention, comprises a plurality of small plates 13 attached in cantilever relationship to the bottom face of a metal backing disk 14 which is adapted for mounting on the assembly 5 of the machine; it is contemplated that the heads 10 may be utilized, rather than to hold a disk grinder 11, to hold a tool bit 12, and

this especially with machines equipped for bidirectional rotation of the planetary system, where rotation in either of the two directions could result in their coming loose. In that case, the tool bit 12 is snugly fitted into the seat for said grinder 11, which is peripherally delimited by the rim 7, and provided with two diametrically opposed holes for accommodating attachment screws to the head 10.

The plates 13 are formed from an abrasive material comprising a high-cobalt metal alloy which contains bort chips.

The plates 13 are welded to the disk 14 and advantageously arranged along the outer ring portion of the disk. The weld is quite conventional, and is effected with added material by means of an oxy-acetylene flame. The plates 13 have a parallelepipedal configuration, and are provided with a face 13a, wherewith they can bear onto the surface 4, and a sharp edge 13b facing in the direction of rotation of the assembly 5.

For roughing jobs, the plates 13 would be parallelepipedons of rectangular base, having their axes substantially inclined relatively to the radial direction. By contrast, for finishing jobs, the tool bit 12 would carry, at the bottom, plates 13 of disk-like configuration, such as shown in Figure 4.

With the granite dressing machine, the disk 14a is provided, at the top, with a threaded hole 15, whereby the disk can be threaded to the respective planet in the assembly 5.

With the marble dressing machine, the disk 14b has the same diameter as the plate 6, whereto it is adapted to be assembled rigidly.

The disk 4b has a rim which defines at the top a cutout 16 adapted to accommodate the rim 7 of the plate 6. Moreover, the disk 14b has an axial shaped throughgoing hole 17, the outline whereof defines notches 18 adapted to accommodate the spurs 8 of the plate 6.

The operation of the tool bit according to this invention, although quite simple and evident, will be next described.

The tool bit 12 is adapted to be mounted on traditional dressing machines, and is capable of exerting, on the surface 4, both an abrasive action and a shearing action, respectively by means of the face 13a and edge 13b of the plate 13.

It should be noted that the weight of the machine 1 is mainly applied to the assembly 5 carrying the tool bits 12, and that the abrasive action is dominant with respect to the shearing action proportionately to the number of plates 13 carried by each tool bit 12. Furthermore, depending on the inclination of the axis of the plates 13 relatively to the radial direction, the shearing action is more or less pronounced. In particular, it has been found that, with an inclination of 20 to 30 degrees, the plate undergoes a uniform wear. Finally, with plates 13 of disk-like shape, it is the abrasive action which prevails, and the tool bits 12 which carry disk-like

plates are mainly utilized for floor finishing purposes, following installation, or for slab dressing. In such situations, in fact, no deep action is required because the flatness of the surface to be dressed is then ensured.

It has been ascertained in practice that the tool bit according to this invention does achieve its objects and in particular that, through the use of this tool bit, the output of conventional machines is more than doubled.

In particular, both the roughing step and dressing step are effected in a single pass, instead of the three passes required for each step when conventional grinders are utilized. This enables a considerable reduction of the job time, and the complete elimination of deadtime for the replacement of the tool bits.

Moreover, the plates 13 wear out to a considerably lesser extent than conventional grinders, thereby the tool cost affects the job costs to a more limited extent. It should be noted, moreover, that the manufacture of the tool bits described hereinabove is made extremely simple, and that it is possible to fully recover the worn out material by unwelding the plates and grinding the bottom face of the backing disk to produce a renewed tool.

Thus, it has been shown that the tool bit does achieve its objects. In practicing the invention, the materials used, as well as the shapes and dimensions may be any selected ones without departing from the protective scope of the appended claims.

CLAIMS

1. A tool bit for marble, granite, and the like slab and dalle dressing machines, characterised in that it comprises a plurality of small abrasive material plates (13) associated in cantilever relationship to the bottom face of a metal backing disk (14), said disk being adapted to be mounted rigid with the machine own drive for rotation therewith.

2. A tool bit according to Claim 1, characterised in that said abrasive material comprises a high-cobalt metal alloy containing bort chips.

3. A tool bit according to Claim 1, characterized in that said small plates (13) are arranged along the outer ring portion of said disk (14).

4. A tool bit according to Claim 3, characterised in that said small plates (13) are welded to said disk (14).

5. A tool bit according to Claim 3, characterized in that said small plates (13) have a parallelepipedal shape and a bearing face and a sharp edge brought to engage with the surfaces of said slabs or dalles.

6. A tool bit for marble, granite, and the like slab and dalle dressing machines, and as herein described and illustrated for the objects specified.

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fig.1

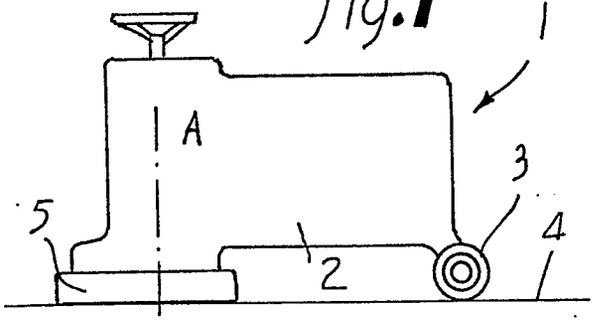


fig.2

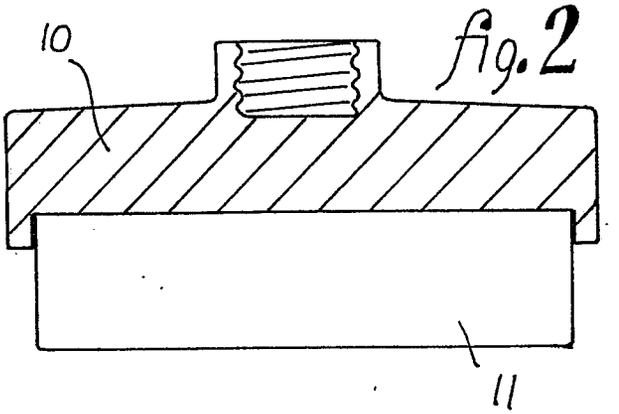
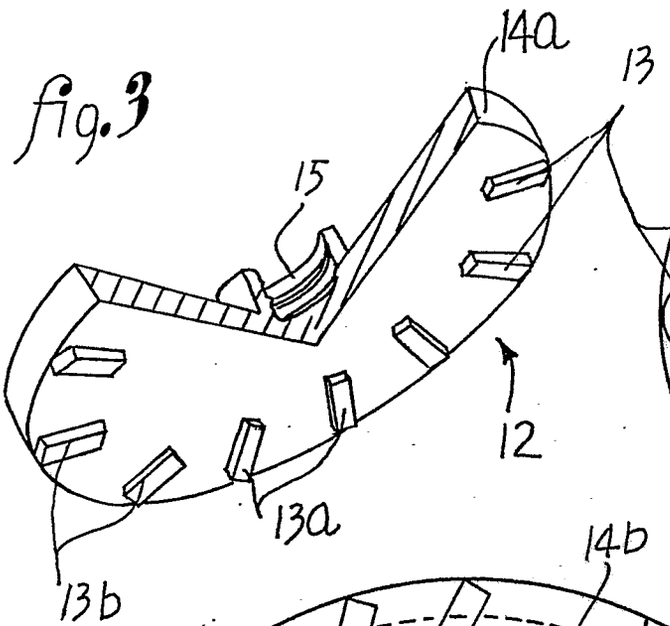


fig.3



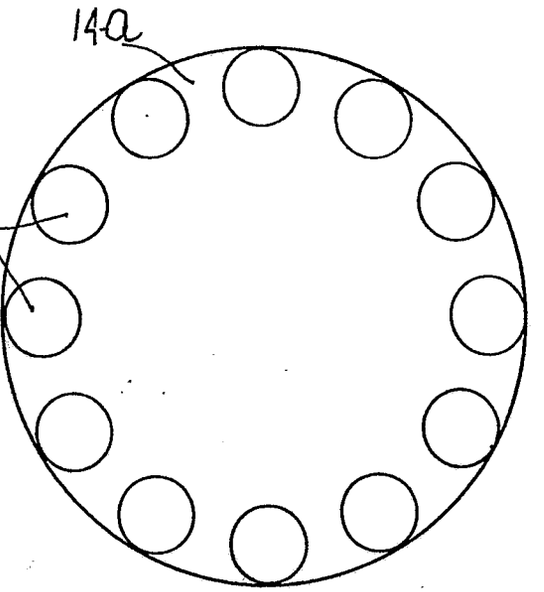


fig.4

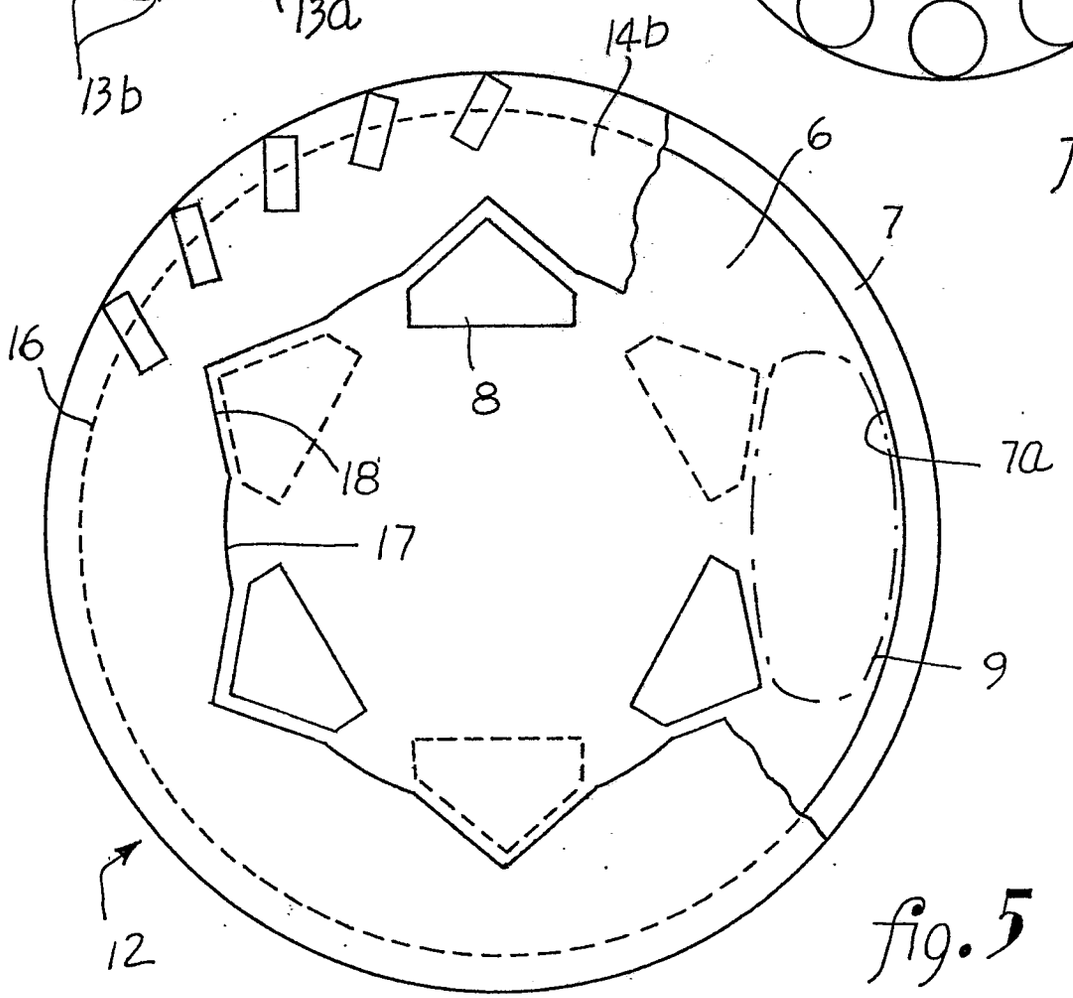


fig.5