



(11) **EP 0 972 484 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
21.11.2007 Bulletin 2007/47

(51) Int Cl.:
A47L 11/164^(2006.01) B24B 7/18^(2006.01)

(21) Application number: **99113722.5**

(22) Date of filing: **13.07.1999**

(54) **Thermal disk device for single-brush polishing machines**

Thermische Scheibe für Poliergerät mit einziger Bürste

Disque thermique pour appareil de polissage à brosse unique

(84) Designated Contracting States:
AT DE ES FR GB IT

(30) Priority: **16.07.1998 IT MI981634**

(43) Date of publication of application:
19.01.2000 Bulletin 2000/03

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(56) References cited:
WO-A-86/00511 US-A- 4 590 635
US-A- 5 016 313 US-A- 5 587 021

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Description

[0001] The present invention relates to a thermal disk device for single-brush machines used for polishing and hot-washing surfaces, in particular floors.

[0002] It is well-known in the art to use single-brush polishing machines to perform the operations of polishing and washing floors or other surfaces with the aid of chemical substances in the form of a paste or liquids which are spread over said surfaces before and while the work is being performed. It is also known that said operations are performed most successfully if heat is supplied to the polishing surface, basically in the case of all types of floor (including those made of linoleum and with the exception of those made of thermoplastic materials), even though the best results are obtained on marbles and granites.

[0003] At present, there exist single-brush polishing machines which use heat supplying devices in which the disk is heated from the outside by means of hot air blowers which direct the heat axially towards the centre so that it then spreads radially over the whole disk. In other embodiments the friction generated by the contact between the rotating polishing disk and a disk, which is fixed or rotating with different speed and associated face-to-face with the former, is used as the heat source. Both the said heat supplying devices have obvious problems, i.e. in terms of excessive overall dimensions and low efficiency in the first case, rapid wear of the disks in the second case, and high energy consumption in both cases.

[0004] US-A-5,587,021 also discloses a single-brush polishing machine, the rotating disk of which is supplied with an auxiliary treatment means (such as water or another suitable solution) passing through the disk itself, via special openings formed therein, said treatment means being heated by means of electric resistances which are embedded in the rotating disk. The extreme constructional complexity and the problems of maintenance associated with this solution, as well as the high costs involved, are obvious.

[0005] The object of the present invention is that of providing instead, at a reasonable cost, a thermal disk device which is of great constructional simplicity and reliable to use. In this device the disk is heated in a diffused and efficient manner with a relatively low energy consumption and has relatively small dimensions.

[0006] According to a first essential aspect of the present invention, a thermal-disk device for single-brush polishing machines is therefore provided, characterized in that it is composed of a rotating polishing disk and a fixed disk which is face-to-face associated with the rotating polishing disk and made of material with good heat-conducting properties, a suitably energized electric resistance being incorporated in the fixed disk and silicone grease being applied onto the contact surface between the fixed disk and the rotating polishing disk in order to ensure lubrication and promote the transfer of heat from the first to the second disk, while keeping the distance

between them as small as possible.

[0007] According to a further aspect of the present invention, a layer of heat insulating material, for example sponge rubber, is interposed between said fixed disk and a cold housing which surrounds the whole device at the top.

[0008] The invention will now be described in greater detail, with reference to the accompanying drawing of a currently preferred embodiment thereof, said figure being an axial cross-sectional view of a single-brush polishing machine equipped with the thermal disk according to the invention.

[0009] In the polishing machine shown in the Figure, a rotating polishing disk 1 is connected to the shaft 2 of a drive motor, not shown, by means of screws 3 and is mounted by means of bearings 4 which allow rotation thereof with respect to a fixed disk 5 with which it is associated, with the respective circular surfaces facing each other and being arranged very close together. Said fixed disk 5 is composed of material with good heat-conducting properties and has incorporated an electric resistance 6 which is controlled by a temperature regulator 7 and is supplied with mains power via a cable 8. This resistance is obviously fixed and supplying thereof with the electric current which also supplies the motor of the polishing machine does not involve any constructional complications or maintenance. A layer of insulating material 10, for example sponge rubber, which thermally insulates the thermal disk device from the housing and the motor, is arranged between the fixed disk 5 and a cold housing 9. Spacers 11 ensure that the layer of insulating material 10 has a constant thickness and join the fixed disk 5 to the cold housing 9. A bracket 12 connects the thermal disk device to the assembly of the single-brush polishing machine which comprises, in a known manner, also an operating lever 13 and a wheel 14 for effecting displacements in the non-operating condition of the machine.

[0010] At the time of assembly, a thick layer of silicone grease is applied onto the contact surfaces between the fixed disk 5 and the rotating polishing disk 1. This grease has a dual function. On the one hand, it ensures efficient lubrication, indispensable for achieving free rotation of the disk 1 with respect to the disk 5, despite the fact that they are very close to each other. On the other hand, it promotes the transfer of heat supplied by the resistance of the disk 5 to the disk 1 which thus works at a high temperature, as desired.

[0011] A safety thermostat which starts to function in the event of a malfunction of the temperature regulator may also be envisaged.

Claims

1. Thermal disk device for single-brush polishing machines, **characterized in that** it is composed of a rotating polishing disk (1) and a fixed disk (5) which is associated face-to-face with the rotating polishing

disk and made of material with good heat-conducting properties, an electric resistance (6) being incorporated in the fixed disk, and silicone grease being applied onto the contact surface between the fixed disk and the rotating polishing disk in order to ensure lubrication and promote the transfer of heat from the first to the second disk, while keeping the distance between them as small as possible.

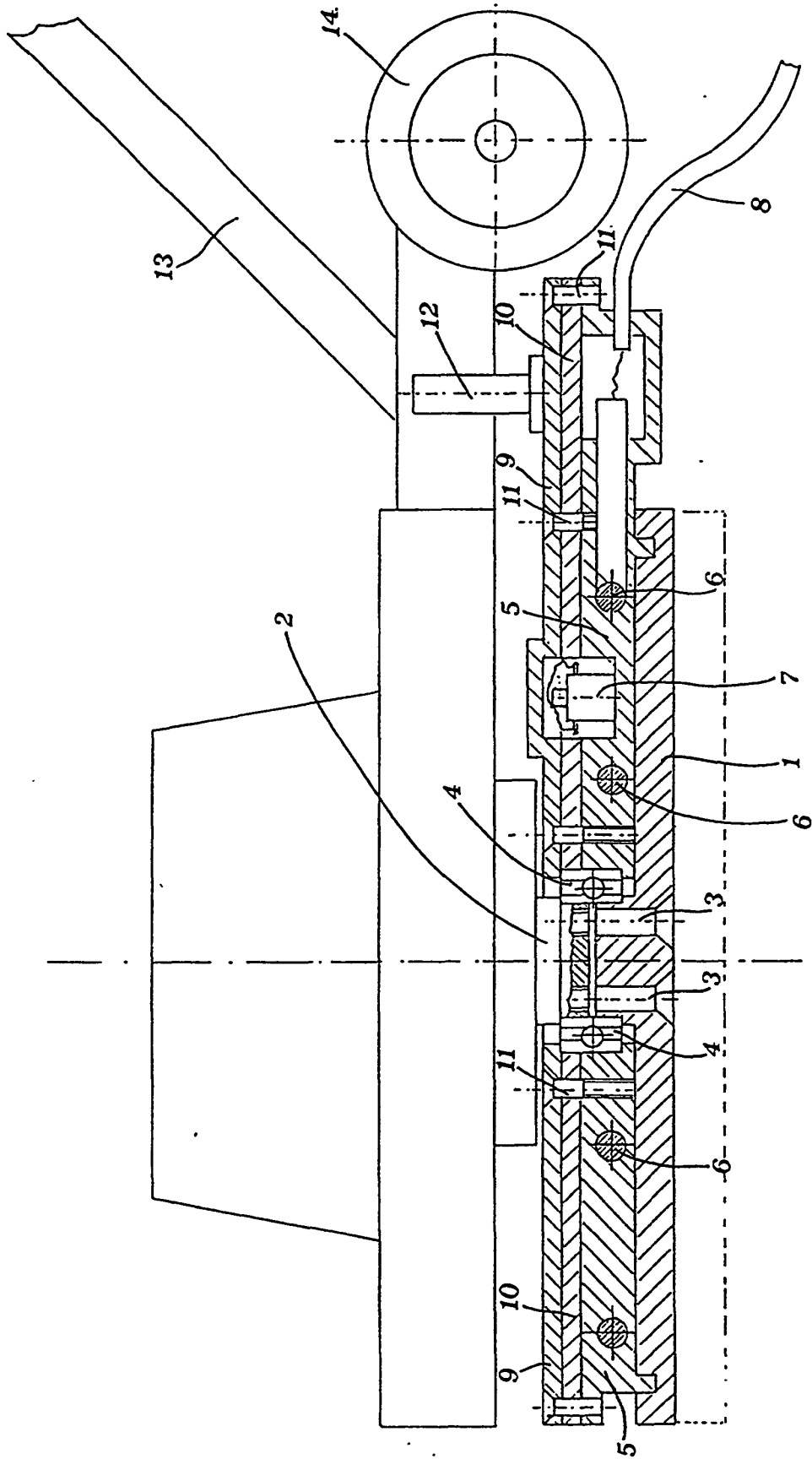
2. Thermal disk device for single-brush polishing machines as claimed in Claim 1, wherein a layer of heat-insulating material, for example sponge rubber, is interposed between said fixed disk and a cold housing which surrounds the whole device at the top.
3. Thermal disk device as claimed in Claims 1 and 2, wherein said resistance is energized via a temperature regulator.
4. Thermal disk device as claimed in Claims 1 to 3, also comprising a safety thermostat.

Patentansprüche

1. Thermische Scheibenvorrichtung für Poliergeräte mit einer einzigen Bürste, **dadurch gekennzeichnet, daß** sie aus einer sich drehenden Polierscheibe (1) und einer festen Scheibe (5) zusammengesetzt ist, die anliegend mit der sich drehenden Polierscheibe assoziiert ist und aus einem Material mit guten Wärmeleiteigenschaften hergestellt ist, wobei ein elektrischer Widerstand (6) in der festen Scheibe integriert ist und Siliconschmierfett auf die Kontaktfläche zwischen der festen Scheibe und der sich drehenden Polierscheibe aufgetragen ist, um eine Schmierung zu gewährleisten und den Wärmetransfer von der ersten zur zweiten Scheibe zu fördern, während der Abstand zwischen denselben so klein wie möglich gehalten wird.
2. Thermische Scheibenvorrichtung für Poliergeräte mit einer einzigen Bürste nach Anspruch 1, wobei eine Schicht aus wärmeisolierendem Material, beispielsweise Schwammkautschuk, zwischen der festen Scheibe und einem Kaltgehäuse, welches die gesamte Vorrichtung an der Oberseite gibt, eingefügt ist.
3. Thermische Scheibenvorrichtung nach Anspruch 1 und 2, wobei der Widerstand über einen Temperaturregler mit Energie beaufschlagt ist.
4. Thermische Scheibenvorrichtung nach Ansprüchen 1 bis 3, ebenfalls umfassend einen Sicherheitsthermostaten.

Revendications

1. Dispositif thermique à disques pour des machines de polissage à une seule brosse, **caractérisé en ce qu'il** est composé d'un disque tournant (1) de polissage et d'un disque fixe (5) qui est associé face-à-face avec le disque tournant de polissage et réalisé en matériau ayant de bonnes propriétés de conduction thermique, une résistance électrique (6) étant incorporée dans le disque fixe, et de la graisse de silicone étant appliquée à la surface de contact qui sépare le disque fixe et le disque tournant de polissage afin de garantir une lubrification et de favoriser un transfert thermique du premier disque au second disque, tout en maintenant la distance qui les sépare aussi petite que possible.
2. Dispositif thermique à disques pour des machines de polissage à une seule brosse selon la revendication 1, dans lequel une couche de matériau thermiquement isolant, par exemple de caoutchouc mousse, est interposée entre ledit disque fixe et un boîtier froid qui entoure tout le dispositif au niveau de la partie supérieure.
3. Dispositif thermique à disques selon les revendications 1 et 2, dans lequel ladite résistance est alimentée via un régulateur de température.
4. Dispositif thermique à disques selon les revendications 1 à 3, comprenant également un thermostat de sécurité.



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 5587021 A [0004]