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(54) **MULTI-LAYER PIECE FOR POLISHING STONE, CERAMIC WARE, PORCELAIN WARE AND FOR ALL TYPES OF PAVING AND CLADDING**

MEHRLAGIGES TEIL ZUM POLIEREN VON STEIN, KERAMIKWARE, PORZELLANWARE UND ALLE ARTEN VON PFLASTERUNG UND VERKLEIDUNG

PIÈCE MULTICOUCHE DESTINÉE AU POLISSAGE DE PIERRE, DE GRÈS CÉRAME, DE GRÈS PORCELAINÉ ET À TOUT TYPE DE PAVEMENTS ET DE REVÊTEMENTS

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Description

OBJECT OF THE INVENTION

[0001] The present invention belongs to the field of polishing machines or devices and, more specifically to the polishing of stone which uses abrasive materials for this.

[0002] The main object of the present invention is a multilayer part for the polishing of any type of stone, whether natural or artificial, earthenware, porcelain stoneware and for all type of floorings and coverings, which considerably optimizes both the quality and the cost of the polishing.

BACKGROUND OF THE INVENTION

[0003] There are currently different machines on the market that enable the polishing of slabs of stone or other similar materials, and which generally have a work table whereon the slabs of stone to polish are placed, and a head for carrying the disc or rotating tool for the abrasion or cutting of the upper surface of the slab. Said heads are commonly mounted on moving supports disposed above a conveyer belt or above a transport surface designed to displace the slabs to polish in a substantially horizontal direction.

[0004] In these machines it is typical that the operator places the slab to polish on the work table so that the head disposed in an upper plane may act on the upper surface of the element to polish.

[0005] These rotating discs have polishing parts that are radially equidistributed and composed of different layers which, on the lower part, contain an abrasive material designed to come into contact with the surface to polish.

[0006] The technical problem posed is that the manufacturing of these polishing parts is performed by joining and sticking one by one their different layers of composition, which gives a worse polishing quality that often causes the breaking and chipping of the stone to polish, with the consequent economic cost, both in time and material and in labour.

[0007] Additionally, the patent document US5567503 (Sexton & Wright) discloses a pad with abrasive particles in a non-porous binder, wherein, in a second embodiment, the pad is an assembly made up of the separable parts, listed below:

- a base having a longitudinally extending locating portion for dovetailing with a head of a polishing machine;
- an intermediate part, which is made of resilient material, such as rubber; and
- an insert, formed and dimensioned for attaching the base and the intermediate part together, and for attaching the base-intermediate part assembly to a polishing pad.

[0008] The base, the intermediate part, the insert and the polishing pad are attached to each other and to the head of the polishing machine by means of holes and screws, which are time-consuming connections, as well as are subjected to tolerances and therefore, noise, vibration and inaccuracy of operation, thereby leading to an early wearing of the abrasive material.

DESCRIPTION OF THE INVENTION

[0009] The present invention resolves the aforementioned technical problem by providing a multilayer part preferably of plastic material, and that may be of other materials (metal, wood, etc.), which enables the polishing of any type of stone material, whether natural stone or artificial stone, earthenware, porcelain stoneware and for all type of floorings and coverings, which considerably optimizes the quality of the polishing due to the flexibility of said multilayer part, whereby the material to polish neither breaks nor is chipped.

[0010] The multilayer part, object of the invention, designed to be joined in its upper part to a head radially disposed on the interior of a rotating disc, and on the lower part whereof is fitted a piece of abrasive material, preferably comprises three superimposed layers: an upper layer which has a trapezoidal protuberance in its central area for its dovetailing with the head, an intermediate layer disposed under the upper layer, adapted to provide flexibility to the part, preferably composed of an elastic material, and a lower layer located under the intermediate layer which has a trapezoidal recess, also adapted for its dovetailing with the aforementioned piece of abrasive material.

[0011] This multilayer part is manufactured by injection, extrusion or any automatic transformation process, thus avoiding having to stick each layer separately, with the consequent benefits this entails in terms of saving time and labour.

[0012] Preferably both the upper layer and the lower layer of the multilayer part are manufactured in hard and rigid plastic. In turn, the intermediate layer is preferably of gum, rubber, PVC or any other type of elastic material. This layer composition enables greater durability of the abrasive material, less pressure to be exerted by the heads and a greater adaptability to materials with reliefs, enamels, etc.

[0013] Therefore, the multilayer part for polishing object of the present invention optimizes the polishing process of all type of stone materials, achieving a considerable saving in the end polishing cost, due less consumption of abrasive material; less consumption of energy as a consequence of less pressure necessary on the heads, and a greater polishing quality. Said multilayer piece makes it possible to obtain more polishing metres per minute, due to the greater speed that can be achieved in the polishing machines as a consequence of a greater flexibility of said multilayer part, and whereby breakages or chippings caused in the pieces to polish are minimized.

DESCRIPTION OF THE DRAWINGS

[0014] To complement the description being made and in order to aid towards a better understanding of the characteristics of the invention, in accordance with a preferred example of practical embodiment thereof, a set of drawings is attached as an integral part of said description, wherein the following has been represented with illustrative and non-limitative character:

Figure 1.- Shows a perspective view of the multilayer part for stone polishing in accordance with a preferred embodiment of the invention.
Figure 2.- Shows a front elevation view showing the dovetailing of the multilayer part with the head and with the piece of abrasive material.
Figure 3.- Shows a plan view of a rotating disc which has radial heads wherein the multilayer part object of the invention is designed to fit.

PREFERRED EMBODIMENT OF THE INVENTION

[0015] Figure 1 represents a multilayer part (1) for the polishing of stone, earthenware, porcelain stoneware and for all type of floorings and coverings, joined in its upper part to heads (2) radially disposed on the interior of a rotating disc (9), shown in figure 3, and on the lower part whereof is fitted a piece of abrasive material (3), as can be observed in figure 2.

[0016] Said multilayer part (1) is formed by three superimposed layers (4, 6, 7) of plastic material: an upper layer (4) of rigid plastic which has a trapezoidal protuberance (5) in its central area for its dovetailing with the head (2), an intermediate layer (6) disposed under the upper layer (4) composed of an elastic material, and a lower layer (7) located under the intermediate layer (6) which has a trapezoidal recess (8), adapted for its dovetailing with the aforementioned piece of abrasive material (3).

[0017] Furthermore, both the upper layer (4) and the lower layer (7) of the multilayer part (1) are manufactured in hard and rigid plastic. Likewise, the intermediate layer (6) is of rubber, and can be of any other type of elastic material.

Claims

1. Multilayer part (1) for the polishing of stone, whether natural or artificial, earthenware, porcelain stoneware and for all type of floorings and coverings, designed to be joined in its upper part to heads (2) radially disposed on the interior of a rotating disc (9), on the lower part whereof is fitted a piece of abrasive material (3), which comprises at least three layers (4, 6, 7):

   - an upper layer (4) which has a trapezoidal protuberance (5) in its central area for its dovetailing with the head (2),
   - an intermediate layer (6) disposed under the upper layer (4), adapted to provide flexibility to the multilayer part (1), and
   - a lower layer (7) located under the intermediate layer (6) which has a trapezoidal recess (8), adapted for its dovetailing with the aforementioned piece of abrasive material (3), **characterized in that**

   said multilayer part (1) is formed by an injection or extrusion process, thus avoiding having to stick each layer separately.

2. Multilayer part (1) for polishing in accordance with claim 1, **characterized in that** both the upper layer (4) and the lower layer (7) are manufactured in hard and rigid plastic.

3. Multilayer part (1) for polishing in accordance with claim 1, **characterized in that** the intermediate layer (6) is composed of an elastic material.

4. Multilayer part (1) for polishing in accordance with claim 3, **characterized in that** the elastic material of the intermediate layer (6) is selected from: gum, rubber and PVC.

Patentansprüche

1. Mehrschichtiges Teil (1) zum Polieren von natürlichen oder künstlichen Steinen, Töpferwaren, Feinsteinzeug und allen Arten von Bodenbelägen und Verkleidungen, das dazu ausgelegt ist, an seinem oberen Teil mit Köpfen (2) verbunden zu werden, die radial auf der Innenseite einer drehenden Scheibe (9) angeordnet sind, wobei am unteren Teil desselben ein Stück abrasives Material (3) befestigt ist, das mindestens drei Schichten (4, 6, 7) umfasst:

   - eine obere Schicht (4), die in ihrem mittleren Bereich einen trapezförmigen Vorsprung (5) besitzt, um diese mit dem Kopf (2) zusammenzufügen,
   - eine Zwischenschicht (6), die unter der oberen Schicht (4) angeordnet und dazu ausgelegt ist, dem mehrschichtigen Teil (1) Flexibilität zu verleihen, und
   - eine untere Schicht (7), die sich unter der Zwischenschicht (6) befindet und eine trapezförmige Vertiefung (8) besitzt, die dazu ausgelegt ist, mit dem vorstehend genannten Stück abrasiven Materials (3) zusammengefügt zu werden,

   dadurch gekennzeichnet, dass das besagte mehrschichtige Teil (1) in einem Einspritz- oder Strangpressverfahren gefertigt wird, wodurch vermieden

wird, dass jede Schicht einzeln angeheftet werden muss.

2. Mehrschichtiges Teil (1) zum Polieren nach Anspruch 1, **dadurch gekennzeichnet, dass** sowohl die obere Schicht (4) als auch die untere Schicht (7) aus hartem und steifem Kunststoff gefertigt sind.

3. Mehrschichtiges Teil (1) zum Polieren nach Anspruch 1, **dadurch gekennzeichnet, dass** die Zwischenschicht (6) aus einem elastischen Material besteht.

4. Mehrschichtiges Teil (1) zum Polieren nach Anspruch 3, **dadurch gekennzeichnet, dass** das elastische Material der Zwischenschicht (6) aus Folgendem ausgewählt wird: Gummi, Kautschuk und PVC.

Revendications

1. Partie multicouche (1) pour le polissage de la pierre, naturelle ou artificielle, de la faïence, du grès cérame et pour tous types de sols et revêtements, conçue pour être assemblée dans sa partie supérieure aux têtes (2) disposées radialement à l'intérieur d'un disque rotatif (9), dans la partie inférieure duquel est monté une pièce de matériau abrasif (3) qui comprend au moins trois couches (4, 6, 7) :

   une couche supérieure (4) qui a une protubérance en forme de trapèze (5) dans sa zone centrale pour son articulation avec la tête (2),
   une couche intermédiaire (6) disposée sous la couche supérieure (4), adaptée pour fournir une flexibilité à la partie multicouche (1), et
   une couche inférieure (7) située sous la couche intermédiaire (6) qui présente un évidement en forme de trapèze (8), adapté pour son articulation avec la pièce de matériau abrasif mentionnée ci-dessus (3),
   ladite partie multicouche (1) est formée par un processus d'injection ou d'extrusion, ce qui évite ainsi d'avoir à coller chaque couche séparément.

2. Partie multicouche (1) pour le polissage selon la revendication 1, **caractérisée en ce que** la couche supérieure (4) et la couche inférieure (7) sont toutes deux fabriquées en plastique dur et rigide.

3. Partie multicouche (1) pour le polissage selon la revendication 1, **caractérisée en ce que** la couche intermédiaire (6) est composée d'un matériau élastique.

4. Partie multicouche (1) pour le polissage selon la revendication 3, **caractérisée en ce que** le matériau élastique de la couche intermédiaire (6) est choisi parmi : la gomme, le caoutchouc et le PVC.

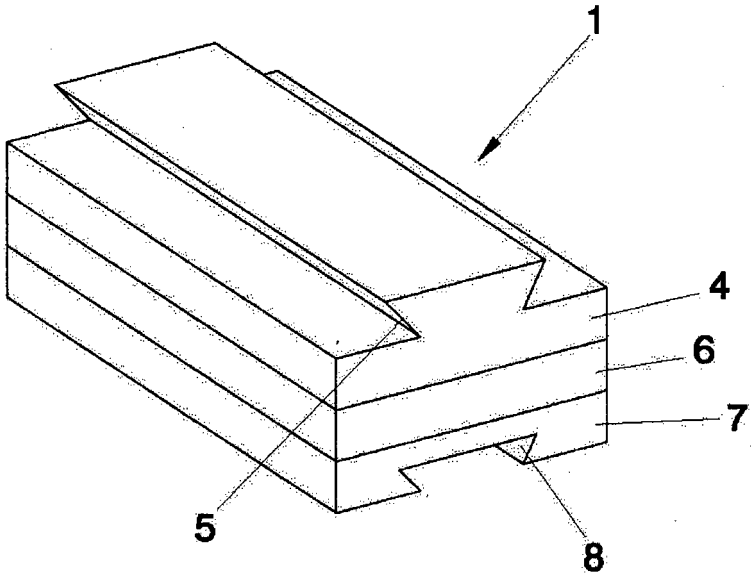


FIG. 1

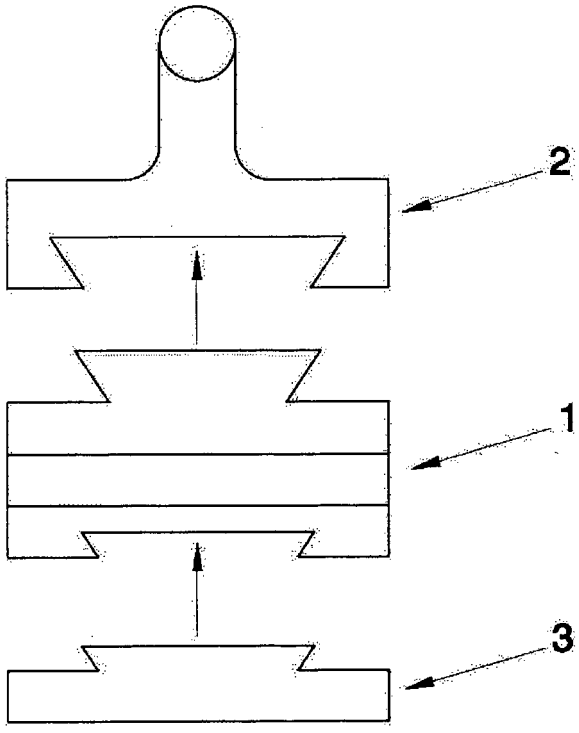


FIG. 2

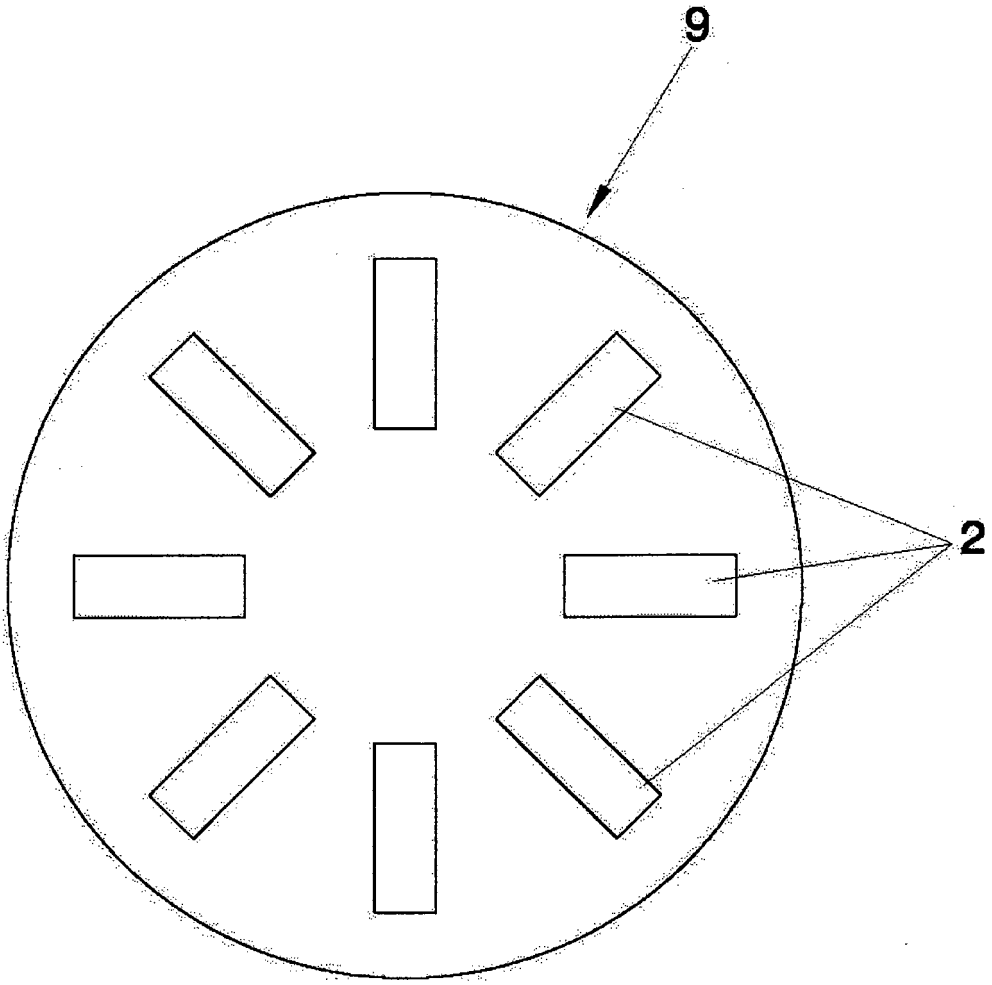


FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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