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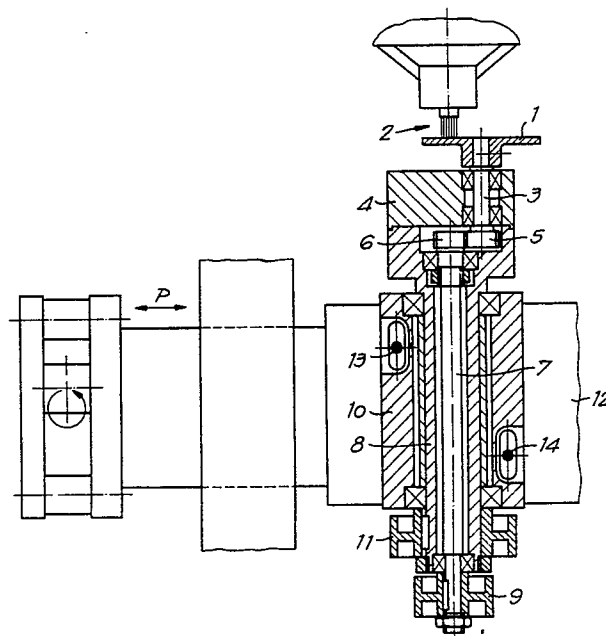
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B-8810 Roeselare-Rumbeke (BE)(84) Designated Contracting States: **BE CH FR GB IT NL SE**(74) Representative: **Donné, Eddy, M.F.J. Bockstael**
Arenbergstraat 13, B-2000 Antwerpen (BE)(54) **Device for rounding off the ends of the fibres of brushes.**

(57) Device for rounding off the fibre ends of brushes, using a disc (1) moving along the fibre ends to be rounded off and being provided with an appropriate abrasive and/or suitable profile, characterized by the fact that the aforesaid disc (1) is fixed on a rotative shaft (3) which apart from its rotation about its own axis is made to move in a circle about a second axis, whilst the rotational speeds of the aforesaid rotative shaft (3) about its own axis, on the one hand, and about the aforesaid second axis, on the other hand, can be adjusted independently the one in relation to the other.



EP 0 019 944 A1

Device for rounding off the ends of the fibres of brushes

The present invention relates to a device for rounding off the ends of the fibres of brushes, more in particular fibres which are made from plastics.

- 5 It is a known fact that in the production of brushes, after the fibres are planted, the free ends of the fibres are shaved with the purpose to work off the inequalities which arise when the fibres are being planted.
- 10 It is also known that through this shaving, at the ends of the fibres sharp edges come into existence, which are not permissible for certain brush types.
- As a matter of fact, such sharp edges could, for instance in
15 the case of tooth-brushes, wound the gums, whereas in other cases, for instance in the case of hairbrushes, such sharp ends could cause hairs to be pulled out and/or the skin of the haid to be injured.
- 20 It is also known that, in order to avoid, for instance in the case of tooth-brushes, any injuries, and in the case of hairbrushes, the pulling out of hairs, and to obtain a good massage of the head skin, the brush fibres must be rounded off after shaving them.

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Consequently, this invention relates to such a device for

rounding off the fibre ends of brushes with fibres made from plastics, this device being extremely simple but very efficient.

5 This device according to the invention mainly comprises a device for rounding off the ends of the fibres of brushes, in which there is used a disc moving along the fibre ends to be rounded off, which is provided with an appropriate abrasive and/or a suitable profile, characterized in that the afore-
10 said disc is fixed on a rotative shaft which, apart from its rotation about its own axis, is made to move in a circle about a second axis, and the rotational speeds of the afore-said shaft about its own axis, on the one hand, and about the aforesaid second axis, on the other hand, can be adjusted
15 independently the one in relation to the other.

With the purpose to throw more light on the characteristics of the invention, a preferred embodiment is described of a device according to the invention, reference being made to
20 the attached drawing.

This device mainly comprises a disc 1 that carries out the rounding off operation proper and that is set up opposite to the brush 2 the fibres of which are to be rounded off. The
25 disc 1 is fixed on a shaft 3 which is rotatably mounted, so as to be free to rotate, in a housing 4 and is provided with a pinion 5, which is in constant mesh with a pinion 6 fixed itself on a shaft 7, which in its turn is rotatably mounted in a housing 8, a belt pulley 9 being fixed on the shaft 7.
30

The housing 8 is also rotatably mounted in a second housing 10 and provided with a belt pulley 11 which is driven independently of the belt pulley 9.

35 The housing 10, which is adjustable in height, is fixed on a slide 12, for instance by means of suitable bolts 13-14, this slide being capable of being appropriately moved, for instan-

ce by means of a suitable crank mechanism.

On the side which is turned towards the brush 2, the disc 1 may be executed differently, depending on the kind of fibres, diameter of same and time available for rounding off the fibre ends.

Thus the side of the disc 1 that faces the brush may be provided with hardened teeth, have a milled edge, be sand-blasted or made rough in any way, or the aforesaid side may be covered with an abrasive, diamond grit, hard metal grit, file pieces, etc.

The brush 2 is always maintained stopped, whilst the disc 1 will be moved in a given way in relation to the brush 2.

A first motion of the disc 1 is obtained through the fact that it is driven around its axis 3, via the pinions 5 and 6, shaft 7 and belt pulley 9.

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A second motion of the disc 1 is obtained by turning the housing 4 together with the housing 8 by means of the belt pulley 11, resulting in an excentric rotation about the axis 7 being imparted to the disc 1 during its rotation about its axis 3.

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A third motion of the disc 1 is finally obtained through the reciprocating motion of the slide 12 according to the arrow P, resulting in the whole assembly 1 through 11 having a reciprocating motion under the brush 2.

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Due to the combination of the three aforesaid motions, and at the same time to the selection of the appropriate abrasive and/or to the appropriate execution of the disc 1, there is obtained that the free ends of the fibres of the brush 2 are machined in a great number of directions in a very short time, in order to efficiently round off the ends of these

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fibres.

The axis of the second rotating shaft will preferably run through the intersection or approximately through the intersection of the diagonals drawn in the rectangle of the brush body wherein fibres are planted.

It is clear that by independently driving the belt pulleys 9 and 11 by means of individual motors, for instance individual 10 motors with a continuous r.p.m. adjustment system, the relative speeds of the shafts 3 and 7 can be adjusted the one in relation to the other, in order that the result of the rounding off may be influenced.

15 It is clear that the invention is by no means limited to the embodiment described as an example and illustrated by the attached drawing, but that such a device can be executed in various shapes and with various dimensions without going outside the scope of the invention.

Claims.

- 1.- Device for rounding off the fibre ends of brushes, using a disc (1) moving along the fibre ends to be rounded off and
5 being provided with an appropriate abrasive and/or suitable profile, characterized by the fact that the aforesaid disc (1) is fixed on a rotative shaft (3) which apart from its rotation about its own axis is made to move in a circle about a second axis, whilst the rotational speeds of the aforesaid rotative
10 shaft (3) about its own axis, on the one hand, and about the aforesaid second axis, on the other hand, can be adjusted independently the one in relation to the other.
- 2.- Device according to claim 1, characterized by the fact
15 that during the aforesaid second rotation, i.e. motion in a circle about a second axis, the aforesaid rotative shaft (3) is at the same time reciprocatingly moved in relation to the brush (2) the fibre ends of which are to be rounded off.
- 20 3.- Device according to claim 1, characterized by the fact that the aforesaid disc (1) is fixed on a rotative shaft (3) that is driven by a second rotative shaft (7) around which the first rotative shaft (3) describes a circular displacement, whilst, on the one hand, the aforesaid second shaft (7)
25 and, on the other hand, the housing (4) wherein the first rotative shaft (3) is mounted, are independently driven.
- 4.- Device according to claim 1 or 3, characterized by the fact that the aforesaid disc (1) is fixed on a shaft (3)
30 which is rotatably mounted, so as to be free to rotate, in a housing (4) in which also a second rotative shaft (7), placed in a direction parallel to the direction of the first shaft (3), is rotatably mounted, so as to be free to rotate, the aforesaid housing (4) being rotatably mounted, so as to
35 be free to rotate, in a second housing (10), and both aforesaid rotative shafts (3-7) being interconnected by an appropriate transmission, whilst the second rotative shaft (7), on the

one hand, and first named housing (4), on the other hand, are each driven by an individual motor.

5.- Device according to claim 4, characterized by the fact
5 that the aforesaid transmission is ensured by pinions (5-6).

6.- Device according to claim 4, characterized by the fact
that the aforesaid second rotative shaft (7) and aforesaid
first housing (4) are each provided with a belt pulley (9-11)
10 each of which, by means of a suitable belt, is driven by a
motor.

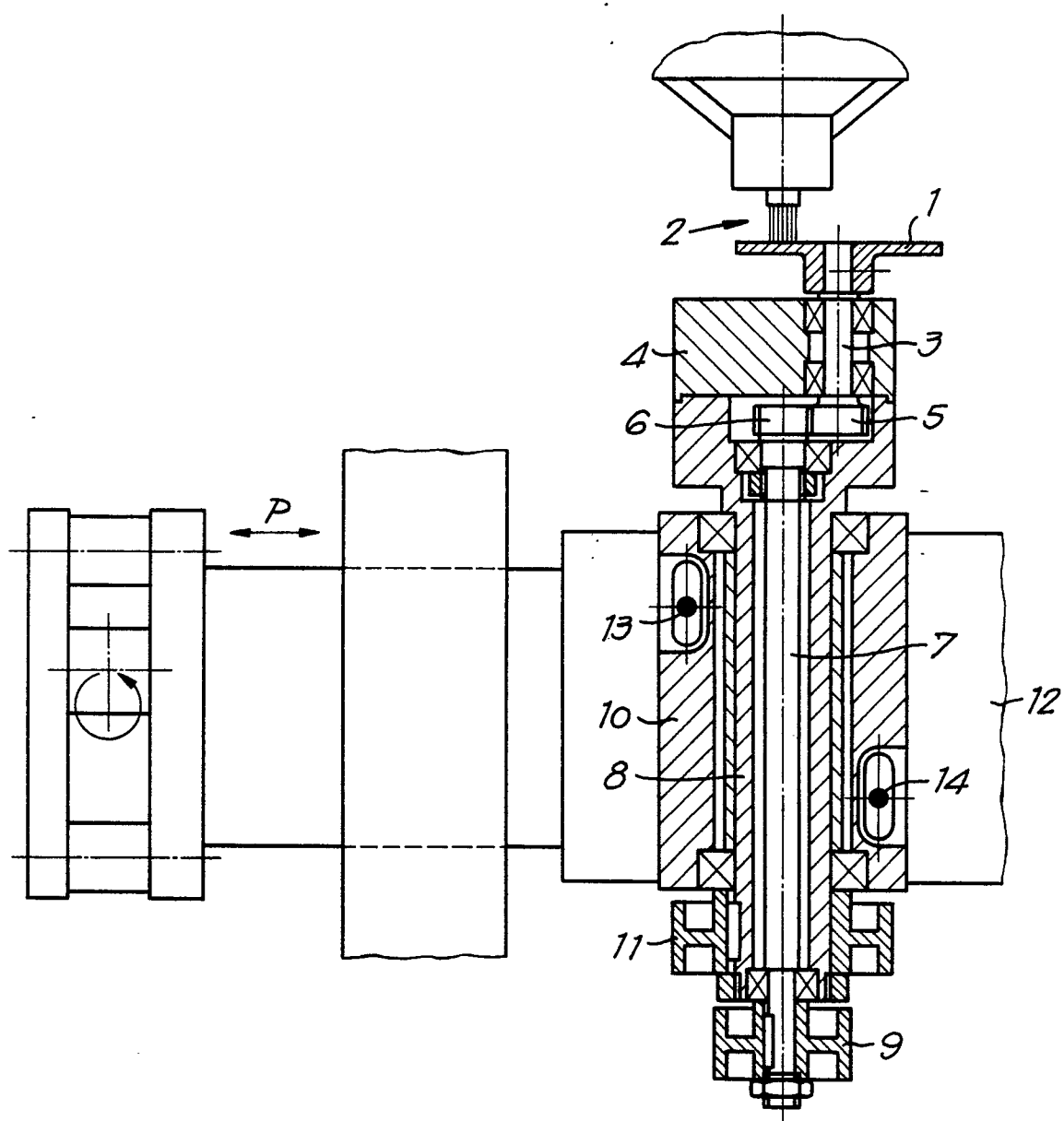
7.- Device according to one of the preceding claims, charac-
terized by the fact that each of the aforesaid motors is
15 provided with a continuous r.p.m. adjustment system.

8.- Device according to one of the preceding claims, charac-
terized by the fact that the axis of the second rotative
shaft (7) runs through or approximately through the inter-
20 section of the diagonals drawn in the rectangle of the brush
body in which the fibres are planted.

9.- Device according to one of the preceding claims, charac-
terized by the fact that the aforesaid second housing (10)
25 is fixed in a slide, which is, for instance, connected with a
crank mechanism, in order to impart to this housing (10) and to
the components connected therewith a reciprocating motion in
relation to the fibres which are to be rounded off.

30 10.- Device according to claim 9, characterized by the fact
that the aforesaid second housing (10) is adjustably mounted
on the aforesaid slide.

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EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	CH - A - 297 349 (S. DREYFUS) * Figures 1-7 *	1-8	A 46 D 9/02
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	US - A - 3 063 204 (J.G. BAUM- GARTNER)	1,9	
	* Figures 1-12 *		
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A	US - A - 2 700 259 (S. DREYFUS) * Figures 1,2,4 *	1	TECHNICAL FIELDS SEARCHED (Int.Cl. 3)
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A	DE - B - 1 299 277 (S.A. LA BROSSE & J. DUPONT REUNIS)	1	A 46 D
	* Complete document *		

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			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
			&: member of the same patent family, corresponding document
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
The Hague	01-09-1980	AUER	