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(54) **Back portion of brush**

(57) Brush roll comprising a metal channel (D) (back portion of brush (D)) that is "wound" in the longitudinal direction of the shaft. The strip (L,B) that is conformed to be transformed into the metal channel will have cuttings (P) in the periphery thereof along the length of the strip (L,B). These cuttings (P) may be spaced apart, regularly or not, and the shape thereof may be circular or any other shape allowing the same result, that is, to make the bristles (C) to project laterally outward the channel (D), covering at those sites of cuttings (P) a surface area of bristles (C) greater than the normal one and without the existence of padding. Thus, when the channel (D) is wound in the shaft, the brush roll will have a better distribution from the point of view of cleaning and/or polishing as thus the brush roll will not make, or will make less, spots in the cleaned surfaces by the brush.

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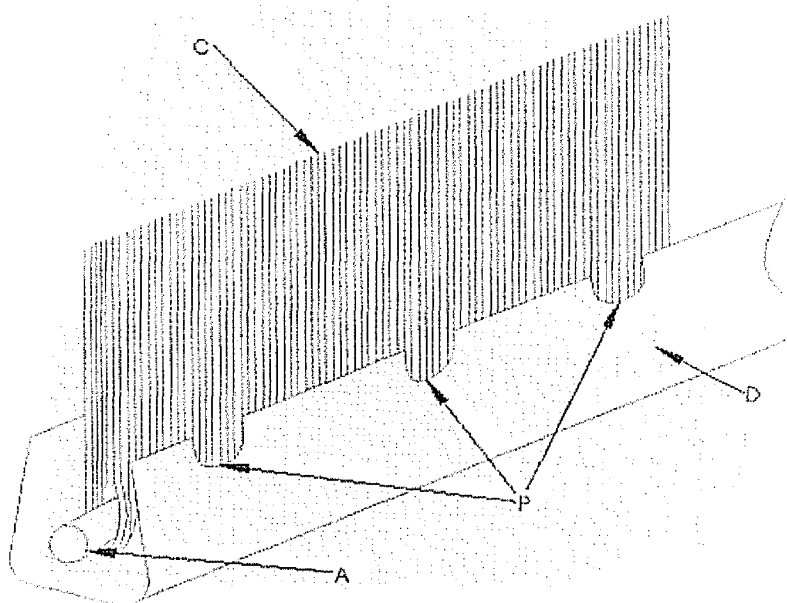


Fig 1

## Description

### TECNICAL FIELD

[0001] The present invention relates to brushes in general regardless the material used to manufacture the back portion (channel) or the material of filling bristles. In particular, the present invention refers to a back portion of a brush of the spiral channel type.

### BACKGROUND OF INVENTION

[0002] Brushes have several applications the majority of them to clean, polish and treat sheets, plates, or strips of steel or any other material.

[0003] One particular type of brush is the spiral-channel type of brush. This brush is mainly manufactured to be installed around spiral shafts, thus forming cylindrical rolls of brushes. These brushes are called "Spiral-Channel Type Brushes".

[0004] These brushes may be manufactured in a variety of dimensions, altering the diameter of the shaft in which the brush is mounted, the dimension of the metal channel (called back portion) wherein the bristles (cleaning wires) are inserted and, mainly, the length of the brushing bristle itself further to the length of the brush cylindrical roll.

[0005] The Spiral-Channel Type Brushes also have varying shapes and construction types of back portion, the most known made in "U" shape without cuts with wire in its internal part for installation of bristles. In this type and in present invention the geometry of the back portion, due to conformation, causes the wire to be fixed.

[0006] A second type of back portion also known is a back portion having side openings, but without removal of material therefrom, the "remaining" pieces serve to help fixation of the wire.

[0007] A third type of back portion widely known is made with side openings, however, without wire but with a strip to fasten the bristles.

### SUMMARY

[0008] The present invention relates to a cylindrical roll of brush provided with the following construction: a brush roll comprising bristles inserted in a metal channel (back portion) spirally wound and this roll thus connected to a shaft. The channel of present invention is a metal strip conformed having cuttings in the side portions.

[0009] In the preferred embodiment, the present invention comprises a metal channel D obtained by conforming by means of a mechanical process in a geometrical shape of a flat strip having spaced apart cuttings in the side portions of the strip of any shape evenly distributed or not in the side portion of the channel; the channel accommodating the bristles C fastened to the channel by means of wire; wherein after conforming, placing the bristles and fastening the same with wire to channel D, the

channel D is spirally wound in the longitudinal direction of a shaft.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0010]

Figure 1 is a perspective view of the back portion of a brush made of conformed strip of present invention in the mounted position with the bristles.

Figure 2 is a section view of the brush roll.

Figure 3 is a top view of the brush roll showing the arrangement of the bristles along the shaft,

Figure 4 is a top view of the strip that will generate the back portion of the brush prior to being conformed in the "U" shape and having the cuttings.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

[0011] The present invention will be better understood from the following description when read in the light of the attached drawings.

[0012] Figure 1 is a perspective view showing the back portion of brush D of the present invention having the strip (L, B) duly conformed in any shape (in the present invention "U" shape) having the bristles C fitted therein and fastened to the back portion by wire A. Bristles C protrude the cuttings P being the same protruding with respect to the outer wall of back portion D. Upon winding the back portion D in a shaft to form the brush itself, with bristles C protruding the cuttings P the space between the coils of the brush, in particular in the side portion of the back portion between the cuttings P, will be filled up by protruding bristles of the spiral of next back portion. This is particularly useful in application requiring excellent surface finishing as during the life time of the brush and with the natural wear in the height of the bristles there is a tendency to create a "gap" between the bristles of adjacent back portions spirally wound causing lack of contact uniformity of the bristles with the work piece. In present invention this does not happen as the gap between adjacent back portions is totally filled up with protuberant bristles and the brush is provided with uniformity of bristles even when these are worn out. This is better illustrated in Figure 3 where the protuberant bristles are represented forming dark shadowed padding.

[0013] Figure 2 shows a section view of the brush roll showing the conformed strip spirally wound on shaft E, the cuttings P described above, the bristles indicated by letter C, the metal channel (the back portion) indicated by letter D and the shaft indicated by letter E.

[0014] In Figure 4, it is shown a top view of the strip in flat format prior to being conformed by any conventional manufacturing process to be transformed into the channel (or back portion of brush) where it will be positioned the bristles to be fastened with wire. The width of the strip is indicated by letter "B" and it will be determined by the final application, not being a limiting factor of present in-

vention, the length is indicated by letter "L" and is not a limiting factor of present invention either. The cuttings for projecting the bristles are indicated by letter P. Such cuttings P may have any desired shape without prejudice to the solution proposed by the invention. The dimensions of width and length will vary according to the application desired. 5

**[0015]** The channel (or back portion) is the housing for the bristles, and it is formed by a metal strip conformed in any geometrical shape, for example "U" shape, however, several shapes may be used to practice the invention and such shape is not a limiting factor of the invention; in general, such process occurs by means of rollers (discs having the shape to be conformed), thus the strip is forced to pass through several rollers having several shapes until the strip is in the desired shape. 10 15

**[0016]** The strip is conformed for the positioning of the bristles and allows that the same are well fastened. In order to guarantee the fastening it is used a flat metal wire that passes through the interior of the channel. The wire is not released from the back portion due to the conformation applied to the channel (back portion). 20

**[0017]** After this process, it is time to proceed with the "winding" of the straight channel with bristles in the longitudinal direction of the shaft with the brush fastened to the shaft, the same rotating to cause the formation of a uniform roll of brush at the end of the process. The other end thereof is also fastened to the shaft and thus the "Spiral-Channel Type Brush" is ready. 25

**[0018]** The invention consists of the differential in the shape of the metal channel of the brush (back portion); the new profile of the same will allow a better distribution of the bristles and elongation of the life time of the brush. 30

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## Claims

### 1. Back portion of brush, **characterized by** comprising:

a metal channel D obtained by conforming, by mechanical process, in a geometric shape a flat strip having spaced apart side cuttings P; the channel accommodating the bristles C fastened to the channel by means of wire; 40

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wherein after conforming, placing the bristles and fastening the same with wire in channel D, the channel D is spirally wound in the longitudinal direction of a shaft. 50

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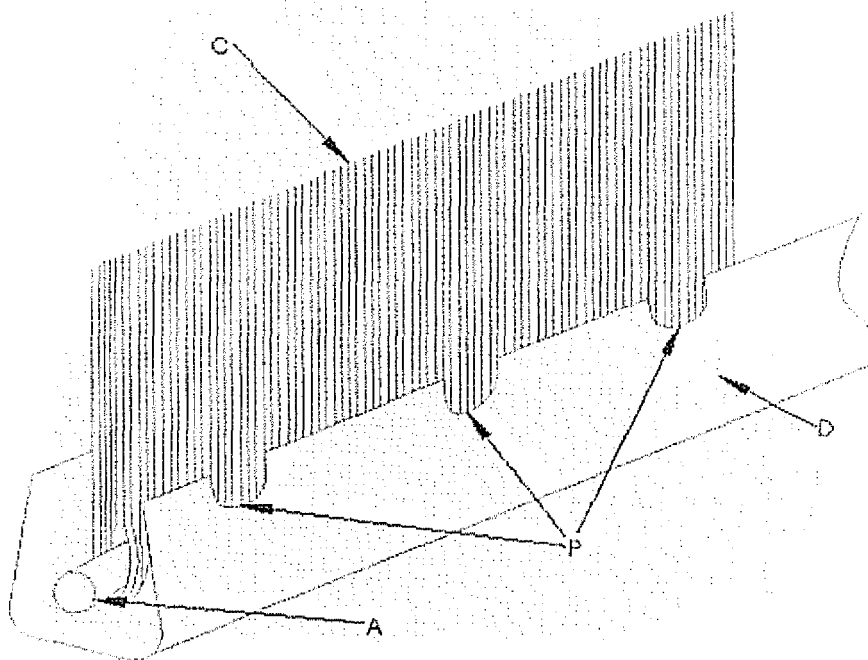


Fig 1

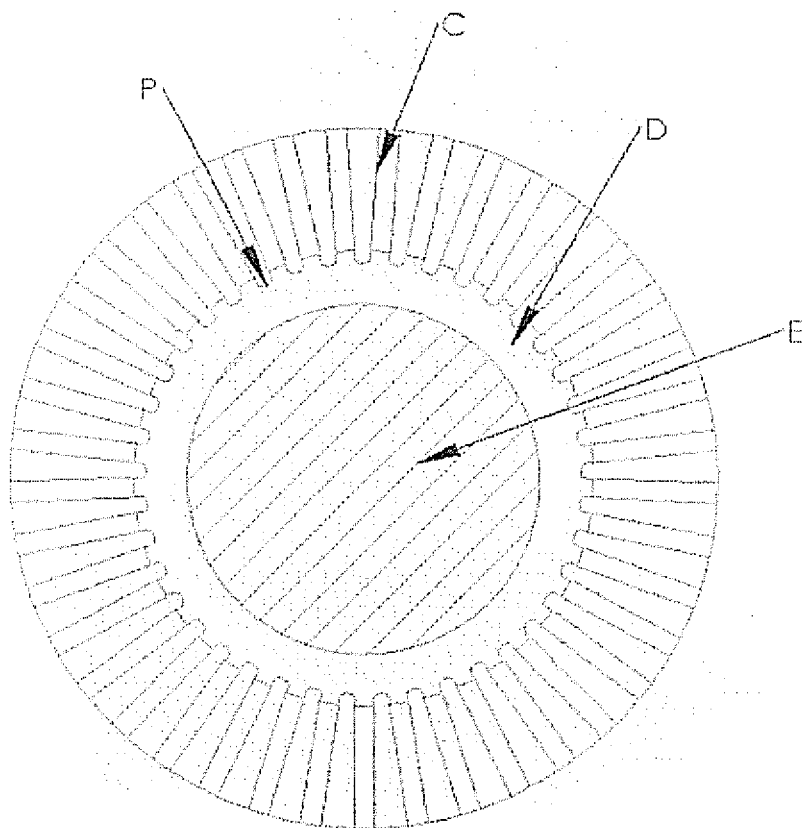


Fig 2

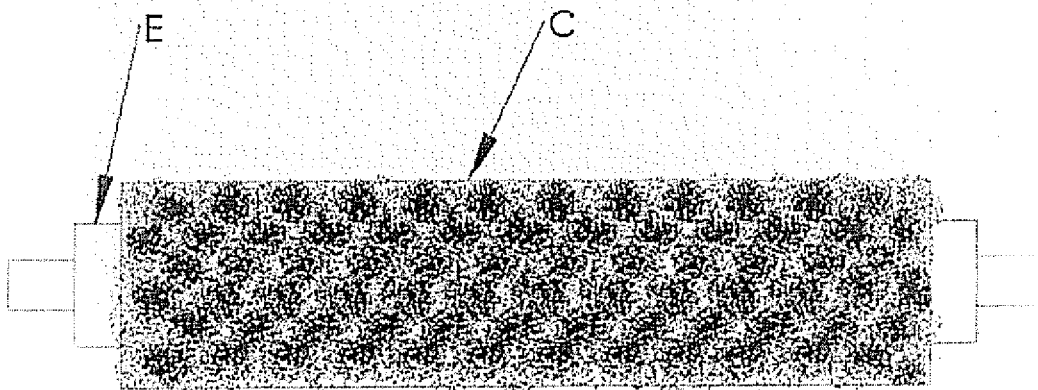


Fig 3

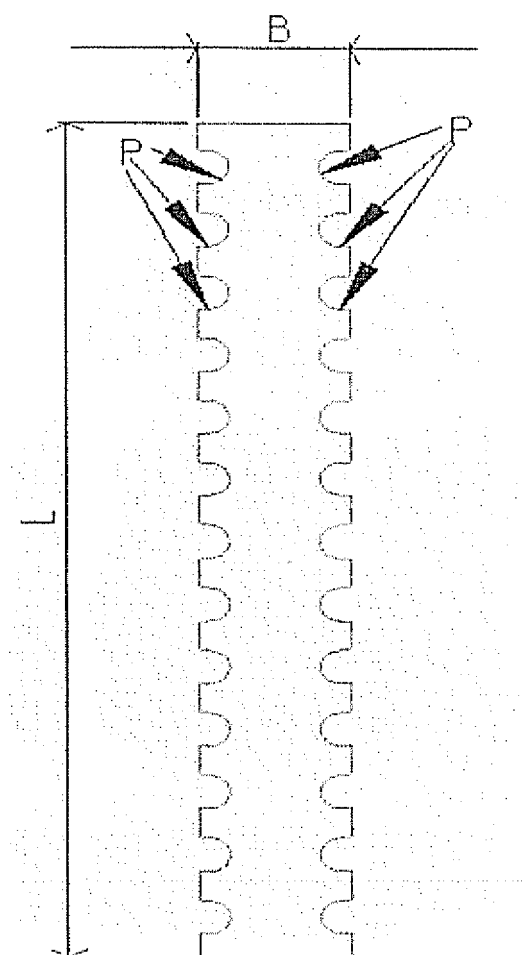


Fig 4



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 07 11 2383

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2 820 235 A (NELSON) 21 January 1958 (1958-01-21) * column 1, line 67 - line 73 * * column 2, line 21 - line 41 * * column 4, line 29 - line 34; figures 1,2 * -----	1	INV. A46B13/00
X	FR 1 260 648 A (CHAINARD) 12 May 1961 (1961-05-12) * page 2, paragraph 4 - paragraph 11; figures 1,2 *	1	
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			TECHNICAL FIELDS SEARCHED (IPC)
			A46B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 12 November 2007	Examiner IONESCU, C
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  
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 11 2383

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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12-11-2007

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FR 1260648	A	12-05-1961	NONE	
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