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D E C I S I O N
of 15 April 2002

Case Number: T 0876/99 - 3.2.4

Application Number: 92924414.3

Publication Number: 0619711

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Language of the proceedings: EN

Title of invention:

Method of making improved toothbrush having multi-level tufts with substantially uniformly rounded bristle ends in each tuft

Patentee:

THE PROCTER & GAMBLE COMPANY

Opponent:

Colgate-Palmolive Company

Headword:

-

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step - yes"

Decisions cited:

-

Catchword:

-



Case Number: T 0876/99 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 15 April 2002

Appellant: THE PROCTER & GAMBLE COMPANY
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 25 June 1999
revoking European patent No. 0 619 711 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: C. A. J. Andries
Members: M. G. Hatherly
H. Preglau

Summary of Facts and Submissions

- I. European patent No. 0 619 711 was revoked by the opposition division's decision dispatched on 25 June 1999.

The appellant (proprietor) filed an appeal on 1 September 1999, paid the appeal fee simultaneously and then filed the statement of grounds of appeal on 5 November 1999.

- II. Claim 1 as granted reads:

"A method of making a toothbrush having bristle tufts (2, 4, 6) with bristle ends in distinct planes, (3, 5, 7) all of said bristle tufts (2, 4, 6) having individual bristles (8, 108, 118) which are substantially uniformly rounded at their free ends, said method comprising the steps of:

(a) affixing a first group of bristle tufts (2) to a toothbrush head (1);

(b) cutting all of said tufts (2) so that the free ends of the bristles (8) contained in said first group of bristle tufts (2) are all in a first plane (3);

(c) subjecting the free ends of said individual bristles (8) in said tufts to an end rounding process while said free ends of said bristles are all in said first plane (3) to produce a generally rounded form on the free ends of said bristles;

(d) affixing at least a second group of bristle tufts (4) to said brush head (1);

(e) cutting the ends of said second group of bristle tufts (4) so that the free ends of the bristles (108) contained in said second group of bristle tufts (4) are all in a second plane (5) which is at a higher elevation than said first plane (3) relative to said brush head (1); and

(f) subjecting the free ends of said individual bristles (108) contained in said second group of bristle tufts (4) to an end rounding process while said free ends of said bristles (108) in said second group of bristle tufts (4) are all in said second plane (5) to produce a generally rounded form on the free ends of said bristles (108) without disturbing the free ends of the bristles (8) in said first plane (3)."

III. The following prior art was cited in the opposition division's decision:

- D1 DE-B-1 532 773
- D2 EP-A-0 078 569
- D3 US-A-4 979 782
- D4 FR-A-2 450 294
- D5 US-A-74 560
- D6 CA-A-507 794

IV. Oral proceedings were held on 15 April 2002 in the presence of the appellant and the respondent (opponent).

During the appeal proceedings the appellant argued that the skilled person would not consider D1 because it concerned neither toothbrushes nor end rounding of bristles. The appellant maintained that the claimed method was novel and inventive over all the cited prior

art.

During the appeal proceedings the respondent maintained that the skilled person would indeed consider D1 and that the modifications to its method to arrive at that claimed were obvious to the skilled person when considering the other cited prior art.

- V. The appellant requested that the decision under appeal be set aside and the patent be maintained as granted (main request) or on the basis of claim 1 as filed during the opposition proceedings (auxiliary request).

The respondent requested that the appeal be dismissed.

Reasons for the decision

1. The appeal is admissible.
2. *Claim 1 as granted (main request) - novelty*

The opposition division's finding in section II-2 of its decision that the subject-matter of claim 1 as granted (main request) is novel over the cited prior art (Articles 52(1) and 54 EPC) has not been disputed in the appeal proceedings and is supported by the board.

3. *Claim 1 as granted (main request) - closest prior art*
 - 3.1 D1 concerns brushes, brooms and the like without specifically mentioning toothbrushes. However the board considers that the skilled person in the art of

toothbrushes has a good knowledge of brushes in general. It seems moreover, from the way the previous method is presented in the acknowledgement of the prior art in D1, that the previous method was well known and would be part of the common general knowledge of the brush maker (and therefore of the toothbrush maker).

- 3.2 Nevertheless the board cannot see that the skilled person wishing to manufacture multilevel toothbrushes with end rounded bristles would start from D1. This is because he has other documents at hand which deal specifically with such manufacture, e.g. D2 (see page 1, line 20 and page 2, lines 5 and 6), D3 (see column 1, line 14 and column 9, line 68 to column 10, line 2) and even the very old D5 (see the title and Figure 1).
- 3.3 Even if the skilled person did start with D1 in mind then the board is not convinced that he would start with what the board will call "the previous method" acknowledged in column 1, lines 14 to 20 thereof. This is because D1 goes on in column 1, lines 20 to 34 to explain the disadvantages of this previous method and to describe a new method to overcome them. The skilled person is thus encouraged to start with this new method not the previous one.
- 3.4 The board finds that D2 discloses a method of manufacturing a multilevel toothbrush with rounded bristle ends which is a realistic starting point for assessing inventive step.
- 3.5 The problem when starting from the method of D2 is to develop a simpler method which nevertheless still yields well rounded bristle ends at the different

levels of the toothbrush.

3.6 The method of claim 1 as granted solves this problem in a simple way. When only two different lengths of bristles are involved, the method is to affix short bristles, cut these short bristles, round these short bristles, then affix long bristles, cut these long bristles and finally round these long bristles.

4. *Inventive step - claim 1 as granted (main request) versus the previous method of D1, and D2 and D6*

4.1 In section II-4 of its decision the opposition division argues that the previous method of D1 (i.e. that set out in column 1, lines 14 to 20) has all the steps of the method of claim 1 as granted except rounding of the free ends of the bristles after the cutting step.

The opposition division concludes that since

- D2 discloses cutting a group of fibres or bristles affixed to a toothbrush head and thereafter rounding the ends of these fibres or bristles,
- end rounding of toothbrush bristles is generally known to be advantageous, and
- end rounding of bristles directly after the cutting operation is generally known in brush making and indeed toothbrush making e.g. from D6,

it would be obvious to adapt said method of D1 by rounding the free ends of the bristles after the cutting step and so to arrive at the method of claim 1 as granted.

4.2 The previous method acknowledged in column 1, lines 14 to 20 of D1 has the following steps of claim 1 as granted:

- (a) affix the shorter tufts to a brush head,
- (b) cut the shorter tufts (presumably at the working end),
- (d) affix the longer tufts, and
- (e) cut the longer tufts (presumably at the working end),

but not the steps (c) and (f) of rounding the bristle ends, and not that the brush is a toothbrush.

4.3 At the priority date of the opposed patent, the skilled person in the art knew that it was normal for toothbrush bristle ends to be round. Sometimes this is achieved by using packs of pre-rounded bristles but these would be of no use in the previous method of D1 because the pre-rounded ends would be cut off.

So the skilled person would realise that if he is to produce toothbrushes with the previous method of D1 which involves cutting after affixing then he must round the ends after cutting.

However, as there are two sets of bristles, affixed and cut at different times, the question is - when **precisely** would it be obvious to round each set of bristles?

4.4 It is clear that the steps of the present method are

set out in the present claim 1 in the order in which they have to be performed. If the steps are performed in another order then the method does not work.

Essentially the bristles are affixed in two stages and the ends are rounded in two rounding operations of which the first rounding operation occurs before affixing the second, longer tufts.

4.5 The previous method of D1 does not include rounding, perhaps because it was never intended to produce toothbrushes by this method. It needs to be examined whether D2 can fill this gap between what is known from D1 and what is claimed in the present patent.

4.6 Lines 6 to 14 of page 5 of D2 describe Fig. 9 which shows that both the long and the short bristles are already affixed before the cutting starts. In stations 31 and 32 the long bristles are cut, in 33 and 34 the short bristles are cut, in 35 and 36 the short bristles are rounded and in 37 and 38 the long bristles are rounded.

The method shown in Fig. 9 of D2 is thus to affix **all** bristles before moving to the next step which is to cut the long bristles, cut the short bristles, round the short bristles and finally round the long bristles.

4.7 The various methods are summarised in the following table.

D1 previous method	D2 Fig. 9	Claim 1 as granted
affix short bristles	affix all bristles	affix short bristles
cut short bristles	cut long bristles	cut short bristles

		round short bristles
affix long bristles		affix long bristles
cut long bristles	cut short bristles	cut long bristles
	round short bristles	round long bristles
	round long bristles	

4.8 Thus, even if the skilled person tries to fill the gap in the teaching of the previous method of D1 with the teaching of D2, he still cannot arrive at the method of claim 1 as granted.

4.9 The opposition division argues that end rounding of bristles directly after the cutting operation is generally known in brush making and indeed toothbrush making e.g. from D6.

Lines 5 to 8 of column 2 of D6 indeed state that rounding and polishing "will be of greatest value when applied directly after the cutting operation" but here a distinction is being drawn between, on the one hand, separate steps of rounding and polishing and, on the other hand, a combined rounding and polishing in "a single quick operation" (column 1, line 29).

Lines 57 to 70 of column 5 describe a fully stuffed brush with long and short bristles. The ends of the long and short bristles are rounded all at the same time using a tool which has pins at different levels.

Thus, apart from the undisputed teaching that cut ends need to be rounded, D6 leads away from the method of claim 1 as granted.

4.10 The respondent argues that, if the skilled person using

the previous method of D1 has the chance to work on a cut set of bristles located in a single plane, it will be obvious for him to do so.

However the prior art does not teach that, immediately after a set of bristles has been cut, it is mandatory to work this as a set and separately from any other set.

For example the chemical rounding process of D4 would enable both long and short bristles to be rounded at the same time.

Moreover the previous method of D1 is similar to that discussed in the the prior art discussion of D2, in the paragraph bridging pages 1 and 2. In the latter method the rows of brush hairs of different lengths are introduced and processed in separate machines.

4.11 Thus the board does not consider that it would be obvious for the skilled person to modify the previous method of D1, using the teachings of D2 and D6, in such a way as to arrive at the method of claim 1 as granted.

5. *Inventive step - claim 1 as granted (main request) versus other cited prior art*

5.1 In the new method of D1, which aims to overcome the disadvantages of the previous method of D1, shorter and longer tufts are affixed at the same time, the longer tufts are covered while the shorter tufts are cut and then the longer tufts are cut, see claim 1 of D1.

This new method of D1 is thus even farther away than the previous method of D1 from the method of claim 1 as

granted.

- 5.2 In D3 the bristles are clamped and their ends are rounded while they all lie in a plane, then the bristles are unclamped and axially shifted to create the curved contour of the rounded ends. The **back** ends are cut in Fig. 1h, see column 8, lines 57 to 63.

Thus, as agreed by the respondent in the second paragraph on page 4 of his letter of 24 January 2000, the method of D3 differs in principle from that of claim 1 as granted. Moreover it shows the lengths to which the designer has gone to achieve rounding of the ends of multilevel bristles, something that the method of claim 1 as granted achieves in a much simpler way.

- 5.3 D4 discloses chemical rounding and was cited against claim 4 but is not relevant to the method set out in claim 1 as granted.

- 5.4 D5 concerns toothbrushes and says in the second paragraph on page 1 that the ends of the trimmed (i.e. cut) bristles are jagged, and have one or more sharp edges. D5 then proposes in the third paragraph on page 1 that, to remedy these evils, the ends are smoothed and polished.

The board understands D5 to mean that one starts with a fully stuffed brush and uses a serrated grinding tool to produce a serrated brush of which the ends of the bristles in the indentations are rounded. Then one uses an ordinary grinding tool to round the ends of the long bristles.

While this method has some similarities with claim 1 as

granted i.e. rounding the longer bristles as the last step, the methods differ in that the known method

- starts with a fully stuffed brush,
- the shorter bristles are brought to length and rounded in a single operation, and
- during this single operation the longer bristles are already present.

Thus, as agreed by the respondent in the third paragraph on page 3 of his letter of 24 January 2000, D5 is more remote than D1.

6. The board can see no way that the prior art documents on file, taken singly or in combination, could lead the skilled person in an obvious way to the method set out in claim 1 as granted. Those of the prior art documents which deal with rounding of the ends of bristles show that previous inventors have not even come close to arriving at the simple set of steps set out in claim 1 as granted.
7. Claim 1 as granted is therefore allowable as are dependent claims 2 to 7.
8. In accordance with the main request of the appellant, the patent can therefore be maintained unamended, i.e. as granted.

Accordingly the appellant's auxiliary request need not be considered.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent as granted.

The Registrar:

The Chairman:

G. Magouliotis

C. Andries