

COMMONWEALTH of AUSTRALIA  
Patents Act 1952

624127

APPLICATION FOR A STANDARD PATENT

I/We

Lingner and Fischer GmbH

of

Hermannstrasse 7, 7580 Buehl/Baden, Federal Republic of Germany

hereby apply for the grant of a Standard Patent for an invention entitled:

~~Novel article~~ Toothbrush

which is described in the accompanying complete specification.

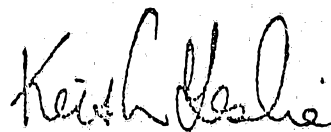
Details of basic application(s):-

<u>Number</u>	<u>Convention Country</u>	<u>Date</u>
880/673.2	United Kingdom	31 March 1988

The address for service is care of DAVIES & COLLISON, Patent Attorneys, of 1 Little Collins Street, Melbourne, in the State of Victoria, Commonwealth of Australia.

DATED this TWENTY NINTH day of MARCH 1989

To: THE COMMISSIONER OF PATENTS



.....  
a member of the firm of  
DAVIES & COLLISON for  
and on behalf of the  
applicant(s)

Davies & Collison, Melbourne

MO07711 29/03/89



COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

DECLARATION IN SUPPORT OF CONVENTION OR NON-CONVENTION APPLICATION FOR A PATENT

Insert title of invention

In support of the Application made for a patent for an invention entitled: NOVEL ARTICLE

Insert full name(s) and address(es) of declarant(s) being the applicant(s) or person(s) authorized to sign on behalf of an applicant company.

I Bernd J. Kaup We of Lingner + Fischer GmbH of Hermannstrasse 7, D-7580 Buehl (Baden), Federal Republic of Germany

Cross out whichever of paragraphs 1(a) or 1(b) does not apply 1(a) relates to application made by individual(s) 1(b) relates to application made by company; insert name of applicant company.

do solemnly and sincerely declare as follows :-

~~XXXX~~ I am the applicant ~~XXXX~~ for the patent

or (b) I am authorized by Lingner + Fischer GmbH

Cross out whichever of paragraphs 2(a) or 2(b) does not apply

the applicant..... for the patent to make this declaration on its behalf.

2(a) relates to application made by inventor(s) 2(b) relates to application made by company(s) or person(s) who are not inventor(s); insert full name(s) and address(es) of inventors.

~~XXXX~~ I am the actual inventor ~~XXXX~~ of the invention

or (b) Hans Halm of Design Studio Halm, Castroperstrasse 34, D-4690 Herne 1, Federal Republic of Germany

State, manner in which applicant(s) derive title from inventor(s)

is the actual inventor..... of the invention and the facts upon which the applicant..... is entitled to make the application are as follows :-

The applicant has acquired the right to the invention under an agreement dated 11th February, 1987, whereby the applicant would, if a patent were granted on an application made by the said actual inventor, be entitled to have the patent assigned to it.

Cross out paragraphs 3 and 4 for non-convention applications. For convention applications, insert basic country(s) followed by date(s) and basic applicant(s).

3. The basic application..... as defined by Section 141 of the Act was made in Great Britain on the 31st March, 1988 by Lingner + Fischer GmbH

Insert place and date of signature.

4. The basic application..... referred to in paragraph 3 of this Declaration was the first application..... made in a Convention country in respect of the invention the subject of the application.

Declared at Buehl (Baden) this 7 day of March 1989

Signature of declarant(s) (no attestation required)

Bernd J. Kaup, as Authorised Signatory for the said Lingner + Fischer GmbH.

Note: Initial all alterations.

(12) PATENT ABRIDGMENT (11) Document No. AU-B-32251/89  
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 624127

- (54) Title  
TOOTHBRUSH
- International Patent Classification(s)  
(51)<sup>4</sup> A46B 005/00
- (21) Application No. : 32251/89 (22) Application Date : 29.03.89
- (30) Priority Data
- |             |           |                   |
|-------------|-----------|-------------------|
| (31) Number | (32) Date | (33) Country      |
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- (43) Publication Date : 05.10.89
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- (71) Applicant(s)  
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- (56) Prior Art Documents  
AU 550380 85913/82 A46B
- (57) Claim

1. A toothbrush having a handle of plastics material and, at one end thereof, a head, which head is integral with the handle,

the handle including, as integral parts thereof, a grip portion, a resiliently flexible portion and a head-carrying portion,

the resiliently flexible portion comprising at least one transverse V-shaped fold formed integrally with the remainder of the handle and in a plane at from 30° to 150° to that in which the handle lies,

whereby the said resiliently flexible portion permits the said head-carrying portion, on the application of pressure to the head, to be moved at an angle to the said grip portion and out of the plane in which it normally lies, and to revert to its original position on the release of said pressure.

624127

COMMONWEALTH OF AUSTRALIA  
PATENTS ACT 1952  
COMPLETE SPECIFICATION

NAME & ADDRESS  
OF APPLICANT:

Lingner and Fischer GmbH  
Hermannstrasse 7  
7580 Buehl/Baden  
Federal Republic of Germany

NAME(S) OF INVENTOR(S):

Hans HALM

ADDRESS FOR SERVICE:

DAVIES & COLLISON  
Patent Attorneys  
1 Little Collins Street, Melbourne, 3000.

COMPLETE SPECIFICATION FOR THE INVENTION ENTITLED:

~~Novel article~~ Toothbrush

The following statement is a full description of this invention, including the best method of performing it known to me/us:-



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The present invention relates to a toothbrush, and in particular to a toothbrush having a flexible zone in the handle.

When brushing one's teeth, particularly with a conventional straight rigid toothbrush, it can be difficult to reach all parts of the mouth in order to brush the teeth satisfactorily. It is also difficult with such brushes to maintain an optimum angle between the teeth and the head of the toothbrush for effective brushing and cleaning, necessitating continual repositioning of the brush in the hand throughout the brushing process. Consequently, there is a tendency to apply excess brushing pressure to some teeth and insufficient pressure to other teeth. The resultant combination of excess brushing pressure and inadequate cleaning or bad cleaning technique can result in damage to both teeth and gums.

Although angled-head toothbrushes have been suggested as an attempt to overcome some of these difficulties, they do not satisfactorily meet all the requirements.

Proposals have also been made for toothbrushes having moveable heads, but these involve multiple parts and are consequently difficult and somewhat expensive to manufacture and are thus not commercially attractive. They can also be somewhat awkward to use.

In a toothbrush having a flexible zone in the handle, it is necessary to balance the flexibility against sufficient rigidity to ensure adequate and proper

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brushing, whilst still retaining a compact shape and size.

The present invention now provides a toothbrush having a handle of plastics material and, at one end thereof, a head, which head is integral with the handle,

the handle including, as integral parts thereof, a grip portion, a resiliently flexible portion and a head-carrying portion,

the resiliently flexible portion comprising at least one transverse V-shaped fold formed integrally with the remainder of the handle and in a plane at from  $30^{\circ}$  to  $150^{\circ}$ , preferably substantially at right-angles, to that in which the handle lies,

whereby the said resiliently flexible portion permits the said head-carrying portion, on the application of pressure to the head, to be moved at an angle to the said grip portion and out of the plane in which it normally lies, and to revert to its original position on the release of said pressure.

One form of toothbrush according to the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

- Fig.1 shows a side view of the toothbrush;
- Fig.2 shows a top plan view of the toothbrush;
- Fig.3 shows an underneath plan view of the toothbrush;
- Fig.4 shows a vertical cross-sectional view along the line IV-IV of Fig.1;
- Fig.5 shows a horizontal cross-sectional view along the line V-V of Fig.1.



01 The toothbrush comprises a head 10, carrying bristles  
02 12, and a handle 14, which includes a grip portion 16,  
03 a resiliently flexible portion 18, and a head-carrying  
04 portion 20. The head 10 and the three portions 16, 18,  
05 20 of the handle 14 are integrally formed of a  
06 resiliently flexible plastics material. Suitable  
07 plastics materials include, for example, polyamides and  
08 polypropylenes. An example of a suitable polyamide is  
09 the material 'Ultramid B3' (Trade mark, marketed by  
10 BASF, Federal Republic of Germany), having a modulus of  
11 elasticity (DIN 53452) of 3000. An example of a  
12 suitable polypropylene is the material 'Novolene 1100  
13 HX' (Trade mark, marketed by BASF, Federal Republic of  
14 Germany), which is a homopolymer and has a modulus of  
15 elasticity (DIN 53457) of 1400. Such a polypropylene  
16 homopolymer may optionally be used in admixture with a  
17 polypropylene block co-polymer, such as the material  
18 'Novolene 2500 HX' (Trade mark, marketed by BASF,  
19 Federal Republic of Germany), for example in an 80 : 20  
20 mixture by weight (1100 HX : 2500 HX).

21 The resiliently flexible portion 18 comprises five  
22 alternately inverted, transverse, V-shaped folds 22 (as  
23 may most clearly be seen in Fig. 1). These together  
24 form a plurality of transverse S-shaped folds. (It  
25 will be appreciated that two V-shaped folds together  
26 may also be described as an S-shaped fold.) The  
27 V-shaped folds 22 each lie in the vertical plane (as  
28 seen in Fig. 1), with the handle 14 and its  
29 longitudinal axis lying in the horizontal plane. Thus  
30 the two said planes are mutually at right-angles. Each  
31 V-shaped fold 22 lies transversely across the whole  
32 width of the handle 14 (see Figs. 2 and 3).

33 One or more of the V-shaped folds could alternatively  
34 be in the form of a more open fold, so that the two  
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03 arms 23a,b of the fold are at an angle to one another  
04 rather than substantially mutually parallel.  
05

06 Across each V-shaped fold 22 is a longitudinal  
07 structural rib 24.  
08

09 When the brush is in use, pressure applied against the  
10 head 10 by the teeth, as shown by arrow A (see Fig: 1),  
11 while the grip portion 16 is held securely in the hand  
12 with the application of finger pressure as shown by  
13 arrow B, will cause the head-carrying portion 20 to  
14 move a short distance at an angle to the grip portion  
15 16, as shown by arrow C, out of the horizontal plane  
16 (as seen in Fig. 1) in which it normally lies. Release  
17 of the pressure at A and B will permit the  
18 head-carrying portion 20 to return to its normal  
19 position by virtue of the resilience of the flexible  
20 portion 18.  
21

22 The degree of flexibility and rigidity of the flexible  
23 portion 18 of the handle may be varied by varying the  
24 number and/or the thickness of the V-shaped folds 22.  
25 In general, flexibility will increase with increasing  
26 number of folds and with decreasing thickness of the  
27 material of the folds. Advantageously, the flexible  
28 portion 18 includes at least two V-shaped folds 22  
29 which are preferably alternately inverted. In general,  
30 the thickness of the walls of the folds will be  
31 somewhat less than the thickness of the grip portion 16  
32 of the handle.  
33

34 The structural ribs 24 impart additional rigidity to  
35 the flexible portion 18. Such ribs may, if desired, be  
36 omitted or reduced in size in order to increase the  
37 degree of flexibility.  
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03 Thus, the desired balance of flexibility and rigidity  
04 may be obtained by varying the number and/or thickness  
05 of V-shaped or S-shaped folds and including, omitting  
06 or varying the size of the structural ribs. The fact  
07 that the degree of flexibility and rigidity can be  
08 altered in two separate ways means that, if it is  
09 desired to have a greater number of V-folds (say,  
10 five), for aesthetic reasons, the greater flexibility  
11 that this would impart may be counterbalanced by the  
12 rigidity provided by the structural ribs.

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14 Thus, the structural arrangement of the flexible  
15 portion 18 according to the present invention enables  
16 the desired balance of flexibility, rigidity, resilience  
17 and aesthetic appeal to be achieved.

18  
19 Each face of the grip portion 16 of the handle carries  
20 an embossed rubber or rubber-like grip mat 26 to  
21 improve hand grip of the handle 14, particularly when  
22 wet. The embossing may be in the form of ribs, raised  
23 dots, or the like, or alternatively the grip mat 26  
24 could include, for example, recessed grooves instead of  
25 embossing. The grip mat 26 may be secured to the  
26 surface of the grip portion 16 of the handle 14 or may  
27 be inset into it. In either case, it may be secured by  
28 adhesion, which may be by self-adhesion or by a  
29 separate adhesive film. Another method of securing the  
30 grip mats 26 is to have perforations within the grip  
31 portion 16 through which the rubber or rubber-like  
32 material of the grip mats 26 extends such that the two  
33 grip mats 26 are secured together through the handle.  
34 This latter method can be particularly advantageous  
35 when the handle 14 is of a material (such as polyamide)  
36 to which the grip mats will not readily adhere.

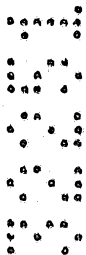
37  
38 It has been found advantageous to form the grip mats 26

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of a material having a Shore hardness A of from 50 to 90, preferably from 65 to 75 (DIN 53505).

Alternatively, the grip mats 26 could be omitted and the grip portion 16 of the handle 14 could include integral embossing or recessing to improve hand grip in a conventional manner.



THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS.

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04 1. A toothbrush having a handle of plastics  
05 material and, at one end thereof, a head, which head  
06 is integral with the handle,  
07 the handle including, as integral parts thereof, a grip  
08 portion, a resiliently flexible portion and a  
09 head-carrying portion,

10  
11 the resiliently flexible portion comprising at least  
12 one transverse V-shaped fold formed integrally with the  
13 remainder of the handle and in a plane at from 30° to  
14 150° to that in which the handle lies,

15  
16 whereby the said resiliently flexible portion permits  
17 the said head-carrying portion, on the application of  
18 pressure to the head, to be moved at an angle to the  
19 said grip portion and out of the plane in which it  
20 normally lies, and to revert to its original position  
21 on the release of said pressure.  
22

23 2. A toothbrush as claimed in claim 1 in which a  
24 longitudinal structural rib is provided across a  
25 V-shaped fold.  
26

27 3. A toothbrush as claimed in claim 1 or claim 2 in  
28 which the flexible portion comprises at least two  
29 V-shaped folds.  
30

31 4. A toothbrush as claimed in claim 3 in which the  
32 V-shaped folds are alternately inverted.  
33

34 5. A toothbrush as claimed in claim 4 in which the  
35 flexible portion comprises five alternately inverted  
36 V-shaped folds.  
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03 6. A toothbrush as claimed in any one of claims 1  
04 to 5 in which the arms of a V-shaped fold are  
05 substantially mutually parallel.  
06

07 7. A toothbrush as claimed in any one of claims 1  
08 to 6 in which the grip portion of the handle carries a  
09 rubber or rubber-like grip mat.  
10

11 8. A toothbrush as claimed in claim 7 in which the  
12 grip mat is embossed or is provided with recessed  
13 grooves.  
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15 9. A toothbrush as claimed in claim 7 or claim 8 in  
16 which the grip portion is provided with perforations  
17 through which rubber or rubber-like material of the  
18 grip mats extends such that two grip mats are secured  
19 together through the handle.  
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21 10. A toothbrush substantially as hereinbefore  
22 described and with reference to the accompanying  
23 drawings.  
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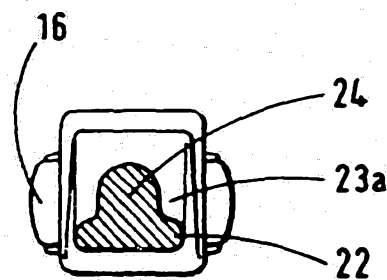
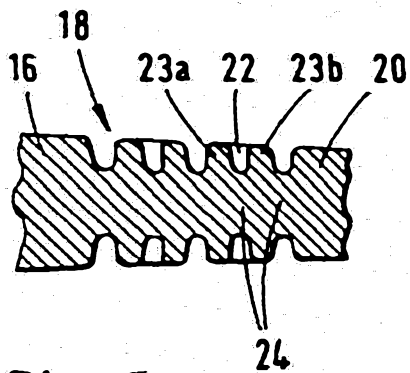
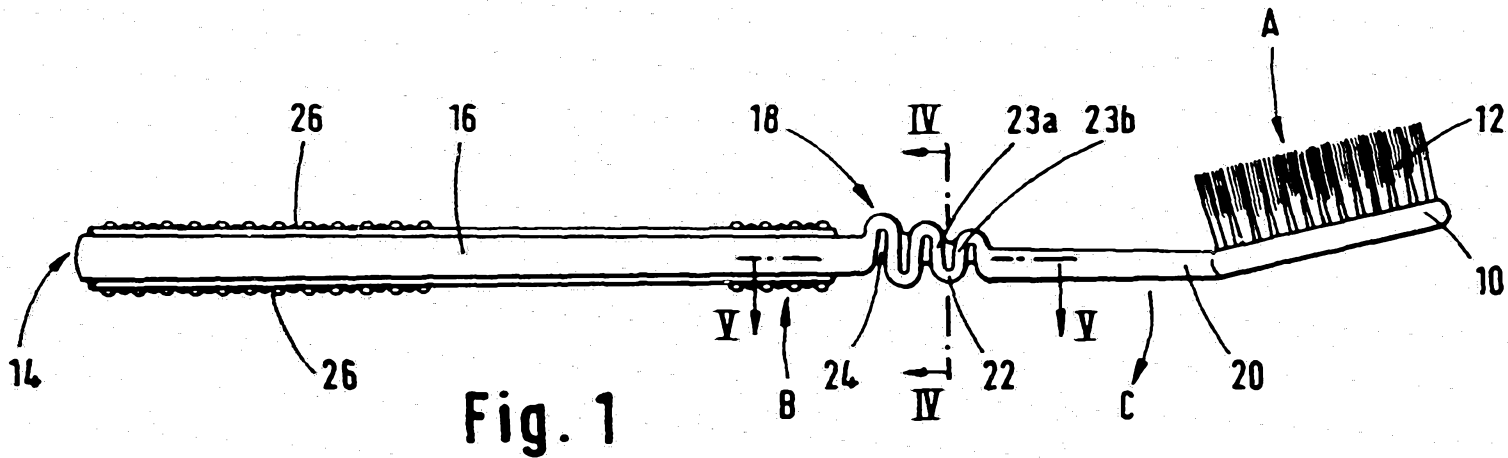
~~11. The steps, features, compositions and compounds disclosed herein or referred to or indicated in the specification and/or claims of this application, individually or collectively, and any and all combinations of any two or more of said steps or features.~~

DATED this TWENTY NINTH day of MARCH 1989

Lingner and Fischer GmbH

by DAVIES & COLLISON  
Patent Attorneys for the applicant(s)





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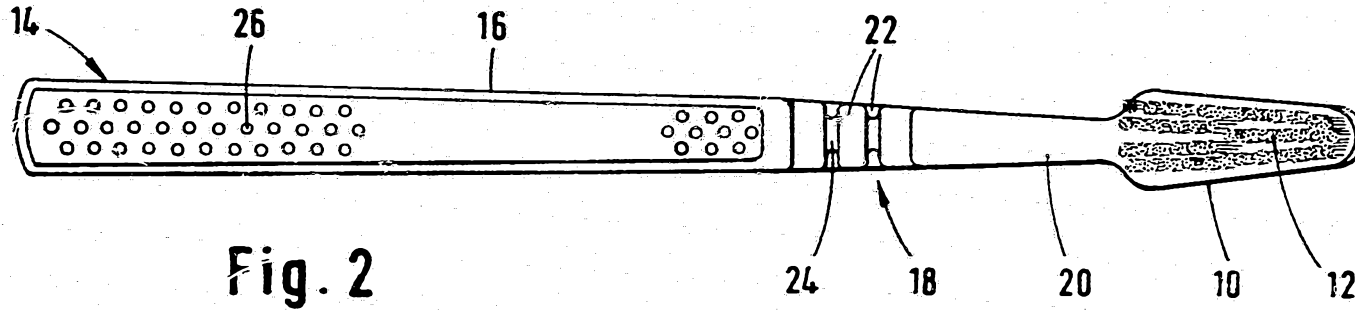


Fig. 2

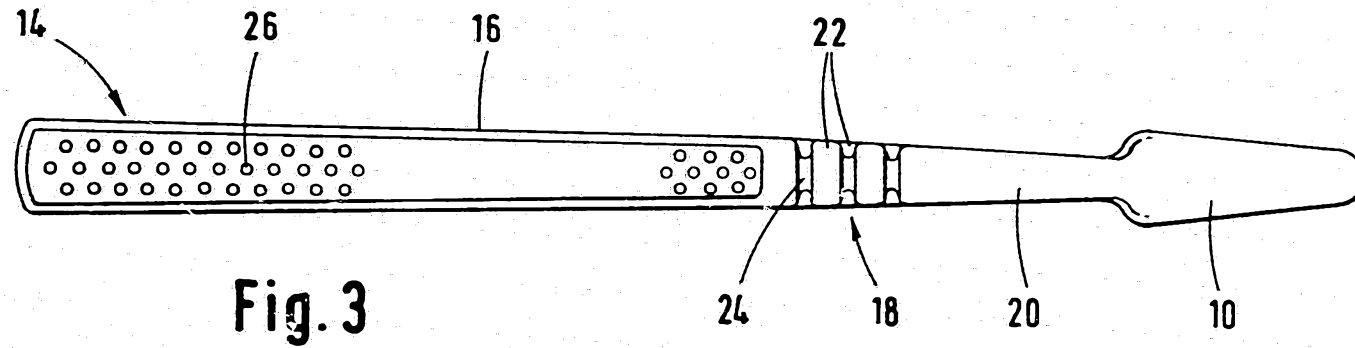


Fig. 3