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(54) **Toothbrush with a deflecting part having a deflection profile**

Zahnbürste, an der ein Teil als Abbiegungsprofil ausgebildet ist

Brosse à dents ayant une partie en profil de déflexion

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Description

The invention relates to a toothbrush with a deflecting part which has a deflection profile and is positioned between brush head and stem, serving to deflect the brush head when a certain contact pressure is reached.

German Offenlegungsschrift 3,706,345 discloses a similar toothbrush for manual or mechanical operation. With this toothbrush the brush head can be deflected on the brush stem when a certain contact pressure is reached, in such a way that an optimum contact pressure con be maintained when brushing the teeth. The deflecting part is designed similar to a leaf spring, and can be cambered or angular and have a central longitudinal slit so that, when too high a contact pressure is exceeded, the brush head can eve fro its previously extended position into a deflected position with respect to the longitudinal axis of the stem. This gives a signal to the user; further brushing of the teeth would also at least be made are difficult, if not impossible. The deflection can occur are or less progressively or, beyond a click point, very fast.

Due to the narrowing of the deflecting part similar to a leaf spring, the toothbrush appears to be disproportioned, and due to the spring being exposed there is a risk of injuries to the mouth because of the edges, and of pinching if a longitudinal slit is present, when the toothbrush is used.

The object of the invention is to specify a toothbrush with a deflecting part having a deflection profile, which toothbrush has an attractively shaped appearance without the deflecting being obstructed, and is free from edges presenting a risk of injuries and free from slits.

This object is achieved by a toothbrush having the features of Claim 1 or Claim 2.

Advantageous embodiments of the invention can be taken from the subclaims.

The invention is explained in more detail below with the aid of exemplary embodiments with reference to drawings, in which:

Figure 1 shows a plan view of a toothbrush,
Figure 2 shows a side view of the toothbrush,
Figure 3 shows a deflecting part on an enlarged scale,
Figure 4 shows a design variant of a deflecting part on an enlarged scale.

A toothbrush consists of a brush head 1 with the bristles 2 and a transition part 3, a deflecting part 4 and a stem 5. The deflecting part 4 connects the transition part 3 to the stem 5, serving as handle. The deflecting part 4 can have a metallic leaf spring 6 or a link 7 of plastics material. The metallic leaf spring or plastics link is covered at least on the front and back thereof by an elastomer. Preferably, the link 7 and the leaf spring 6 are entirely enclosed by a jacket 8 made of an elastomer, covering all sharp edges of the leaf spring 6 or of the link 7. The jacket 8 made of elastomer is designed so that it forms a positive connection of the free end of the transition part 3 of the brush head 1 with the connecting end of the stem 5 and nevertheless enables the leaf spring 6 or the link 7 to be deflected. The jacket 8 can also serve the optical design of the toothbrush and, for example, have a concave or convex camber and can have different colours compared with the other parts of the toothbrush.

If a metallic leaf spring 6 is used, this is preferably firmly anchored in the transition part 3 or in the stem 5, for example by means of the injection moulding procedure. In this case, the jacket 8 can either have been applied previously or it can be applied subsequently, when the transition part has already been firmly connected by means of the leaf spring 6 to the stem 5.

In the case of the deflecting part 4 having a link 7, the brush head 1 can be made without bristles 2, the transition part 3, the deflecting part 4 and the stem 5 can be manufactured of one material in one manufacturing step, for example by injection moulding. The link 7 can also be manufactured in one piece with either the transition part 3 or the stem 5 and can then be plugged into a correspondingly designed indentation 9 (Figure 4) of the respective complementary part. Preferably a snap-on connection 10 is provided which ensures a firm connection of the link 7 in the transition part 3 and/or stem 5. The leaf spring 6 or the link 7 are arranged and designed in such a way that the brush head 1 can only be deflected in the direction indicated by an arrow in Figure 2.

In the case of the link not being connected in one piece with the brush head 1 and the stem 5, it can be pushed onto the link 7 in the form of an annular element prior to assembly.

Otherwise, the jacket 8 can be applied as one piece around the leaf spring 6 or the link 7 by means of injection moulding. In the case of the jacket 8 consisting of a material which does not form a firm connection with the material of the transition part 3 or of the stem 5, or is difficult to bond, a mechanical anchoring of the jacket 8 (see Figure 3) can also be provided, in which case indentations or undercuts 11 can be provided in the deflecting part 4 and/or at the end of the stem 5. The jacket 8 would then have a slit (not represented) for pushing it on sideways, which can be bonded, if required.

The metallic leaf spring 6 consists of electrogalvanized or chromium-plated steel, or of a rust-proof metal or metal alloy, preferably a copper beryllium alloy.

The elastomer of the jacket 8 preferably consists of natural or synthetic rubber, such as styrene-butadiene rubber, butyl rubber, ethylene rubber, propylene rubber, silicone rubber or an ethylene vinyl acetate copolymer or plasticized PVC, in which case a Shore hardness of A 40 to 80 is preferably to be provided.

Claims

1. Toothbrush with brush head (1) having bristles (2) and a transition part (3), stem (5) and a deflecting part (4) which has a deflection profile and which connects the transition part (3) of the head to stem (5),

serving to deflect the brush head (1) when a certain contact pressure is reached, wherein the deflecting part (4) comprises metallic leaf spring (6) consisting of electrogalvanized or chromium-plated steel, a rust-proof metal or a metal alloy and in that the leaf spring (6) is covered at least on its front and back by an elastomer.

2. Toothbrush with brush head (1) having bristles (2) and a transition part (3), stem (5) and a deflecting part (4) which has a deflection profile and which connects transition part (3) of the head to stem (5), serving to deflect the brush head (1) when a certain contact pressure is reached, wherein the deflecting part (4) is a link (7) of plastics material similar to a leaf spring, which connects the brush head (1) to the stem (5) and is covered at least on the front and back by an elastomer.

3. Toothbrush according to Claim 2, characterized in that the stem (5), the brush head (1) and the link (7) are manufactured in one piece.

4. Toothbrush according to Claim 2, characterized in that the link (7) is mechanically connected to the brush head (1) and/or the stem (5).

5. Toothbrush according to one of Claims 1 to 4, characterized in that the elastomer ensure a smooth transition from the deflecting part (4) to the stem (5) and/or brush head (1).

6. Toothbrush according to one of Claims 1 to 5, characterized in that the elastomer is applied by means of injection moulding.

7. Toothbrush according to one of Claims 1 to 5, characterized in that the elastomer is mechanically anchored to the stem (5) and/or brush head (1).

8. Toothbrush according to one of Claims 1 to 7, characterized in that the elastomer is a natural or synthetic rubber, such as styrene-butadiene rubber, butyl rubber, ethylene rubber, propylene rubber, silicone rubber, or an ethylene vinyl acetate copolymer or plasticized PVC.

9. Toothbrush according to Claim 8, characterized in that the elastomer has a Shore hardness of A 40 to 80.

Patentansprüche

1. Zahnbürste mit einem Bürstenkopf (1), einem Übergangsteil (3), einem Stiel (5) und einem Abbiegungsteil (4), welcher ein Abbiegungsprofil aufweist und welcher den Übergangsteil (3) mit dem Stiel (5) verbindet, der dazu dient, den Bürstenkopf (1) abzubiegen, wenn ein bestimmter Kontaktdruck erreicht ist, wobei der Abbiegungsteil (4) eine metallische Blattfeder (6) umfaßt, welche aus elektrogalvanisiertem oder verchromtem Stahl, einem rostfreien Metall oder einer Metallegierung besteht, und die Blattfeder (6) wenigstens an ihrer Vorder- und ihrer Rückseite von einem Elastomer bedeckt ist.

2. Zahnbürste mit einem Bürstenkopf (1), einem Übergangsteil (3), einem Stiel (5) und einem Abbiegungsteil (4), welcher ein Abbiegungsprofil aufweist und welcher den Übergangsteil (3) mit dem Stiel (5) verbindet, der dazu dient, den Bürstenkopf (1) abzubiegen, wenn ein bestimmter Kontaktdruck erreicht ist, wobei der Abbiegungsteil (4) ein einer Blattfeder ähnliches Verbindungsstück (7) aus Kunststoffmaterial ist, welches den Bürstenkopf (1) mit dem Stiel (5) verbindet und wenigstens an der Vorder- und der Rückseite von einem Elastomer bedeckt ist.

3. Zahnbürste nach Anspruch 2, dadurch gekennzeichnet, daß der Stiel (5), der Bürstenkopf (1) und das Verbindungsstück (7) in einem Stück gefertigt sind.

4. Zahnbürste nach Anspruch 2, dadurch gekennzeichnet, daß das Verbindungsstück (7) mit dem Bürstenkopf (1) und/oder dem Stiel (5) mechanisch verbunden ist.

5. Zahnbürste nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß das Elastomer einen glatten Übergang vom Abbiegungsteil (4) zum Stiel (5) und/oder zum Bürstenkopf (1) gewährleistet.

6. Zahnbürste nach einem der Ansprüche 1 bis 5, dadurch gekennzeichnet, daß das Elastomer mittels Spritzgießen aufgebracht wird.

7. Zahnbürste nach einem der Ansprüche 1 bis 5, dadurch gekennzeichnet, daß das Elastomer auf dem Stiel (5) und/oder dem Bürstenkopf (1) mechanisch verankert ist.

8. Zahnbürste nach einem der Ansprüche 1 bis 7, dadurch gekennzeichnet, daß das Elastomer ein natürlicher oder synthetischer Kautschuk, wie Styrol-Butadien-Kautschuk, Butylkautschuk, Ethylenkautschuk, Propylenkautschuk, Siliconkautschuk oder ein Ethylenvinylacetat-Copolymer oder weichgemachtes PVC ist.

9. Zahnbürste nach Anspruch 8, dadurch gekennzeichnet, daß das Elastomer eine Shore-A-Härte von 40 bis 80 besitzt.

Revendications

1. Brosse à dents ayant une tête de brosse (1), une partie de transition (3), une tige (5) et une partie de

déformation (4) ayant un profil à déformation qui relie la partie de transition (3) à la tige (5), servant à dévier la tête de brosse (1) lorsqu'une certaine pression de contact est atteinte, dans laquelle la partie de déformation (4) comprend un ressort à lame (6) métallique constitué d'acier électrogalvanisé ou à placage au chrome, d'un métal étanche à la rouille ou d'un alliage de métaux, et dans laquelle le ressort à lame (6) est recouvert d'un élastomère au moins sur ses parties avant et arrière.

2. Brosse à dents ayant une tête de brosse (1), une partie de transition (3), une tige (5) et une partie de déformation (4) ayant un profil à déformation et qui relie la partie de transition (3) à la tige (5), servant à dévier la tête de brosse (1) lorsqu'une certaine pression de contact est atteinte, dans laquelle la partie de déformation (4) est une liaison (7) en matière plastique, analogue à un ressort à lame, qui relie la tête de brosse (1) à la tige (5) et est recouverte d'un élastomère au moins sur les parties avant et arrière.

3. Brosse à dents selon la revendication 2, caractérisée en ce que la tige (5), la tête de brosse (1) et la liaison (7) sont fabriquées d'un seul tenant.

4. Brosse à dents selon la revendication 2, caractérisée en ce que la liaison (7) est reliée mécaniquement à la tête de brosse (1) et/ou à la tige (5).

5. Brosse à dents selon l'une des revendications 1 à 4, caractérisée en ce que l'élastomère assure une transition uniforme depuis la partie de déformation (4) vers la tige (5) et/ou la tête de brosse (1).

6. Brosse à dents selon l'une des revendications 1 à 5, caractérisée en ce que l'élastomère est appliqué au moyen d'un moulage par injection.

7. Brosse à dents selon l'une des revendications 1 à 5, caractérisée en ce que l'élastomère est ancré mécaniquement à la tige (5) et/ou la tête de brosse 1.

8. Brosse à dents selon l'une des revendications 1 à 7, caractérisée en ce que l'élastomère est un caoutchouc naturel ou synthétique, tel qu'un caoutchouc styrène-butadiène, un butyl-caoutchouc, un caoutchouc d'éthylène, un caoutchouc de propylène, un caoutchoucsilicone, ou un copolymère éthylène- acétate de vinyle ou un PVC plastifié.

9. Brosse à dents selon la revendication 8, caractérisée en ce que l'élastomère présente une dureté Shore comprise dans la plage allant de A40 à 80.

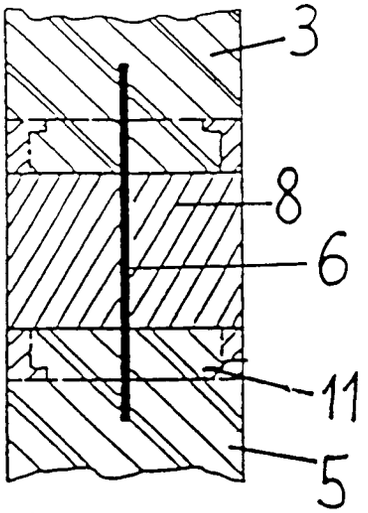

Fig. 3

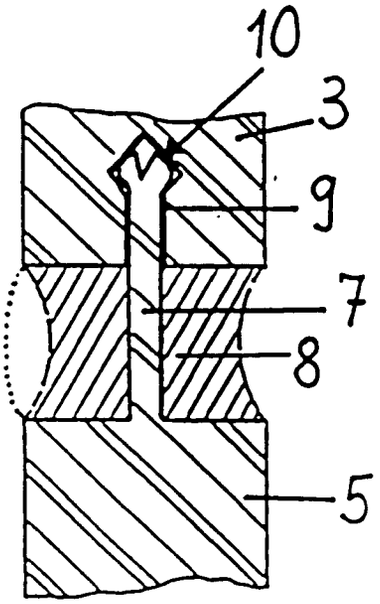

Fig. 4

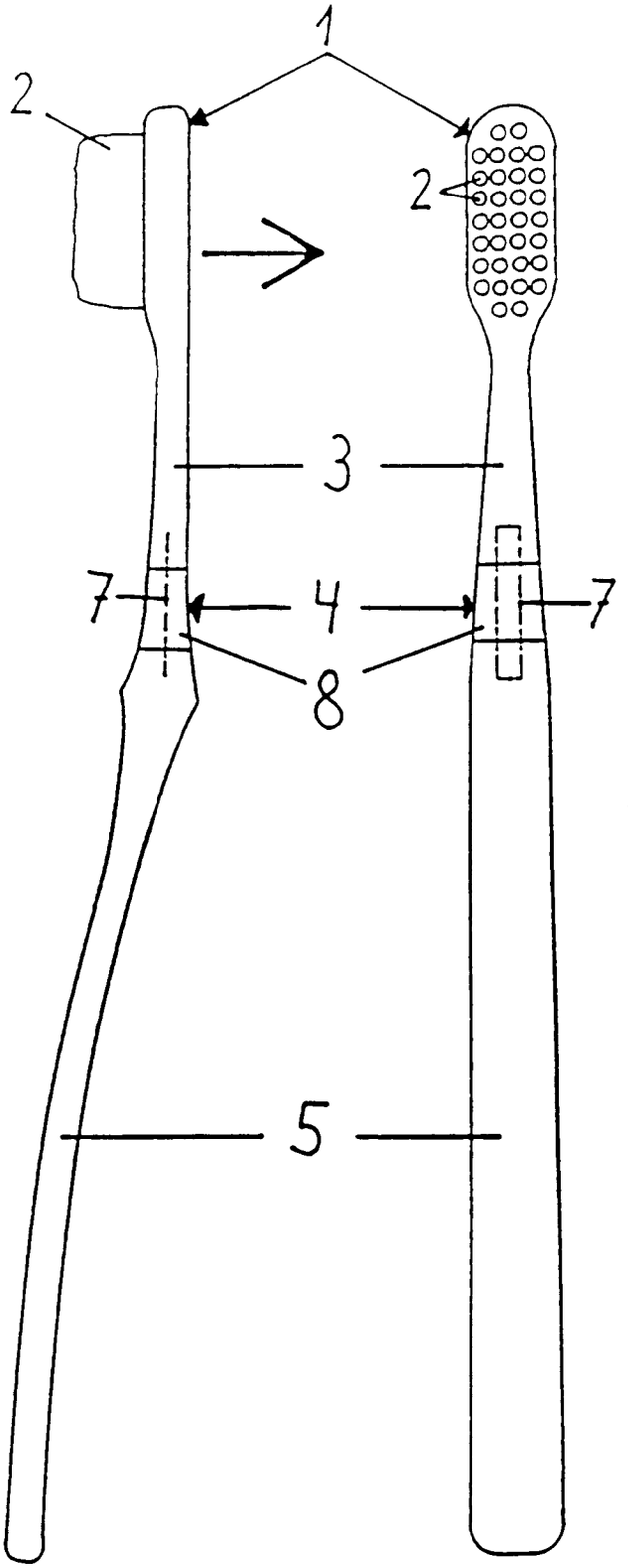

Fig. 2

Fig. 1