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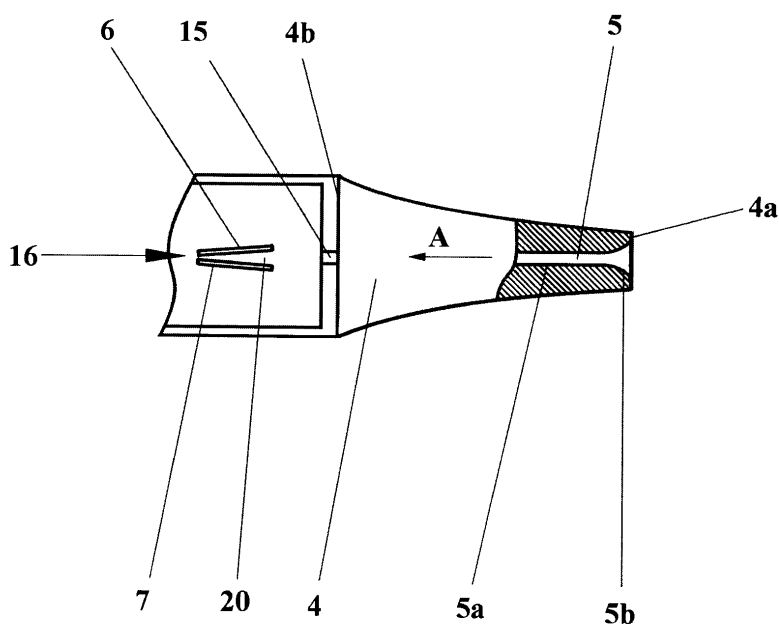
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(54) **Brush handle**

(57) The present invention relates to a brush handle for releasably receiving a brush having a brush portion at one end and a shaft portion at the other end, the handle being formed by two interconnectable handle portions intended to lockingly receive the shaft portion therebetween in their interconnected condition and said handle having an insertion opening (5) for introducing

the shaft portion between the handle portions in a general shaft insertion direction (A), whereby the insertion opening is provided in one of the handle portions adjacent a first free end thereof and whereby said one of the handle portions is provided with at least one support (5a, 16) for supporting a part or parts of the shaft before and during the locking together of the handle portions.

FIG. 3b



Description

TECHNICAL FIELD

[0001] The present invention relates generally to miniature brushes of the kind having a brush portion at one end, which is supported by an elongated shaft portion, and specifically relates to a brush handle for such a brush, of the kind indicated in the preamble of the enclosed claim 1, and to the use of such a brush handle, as specified in the enclosed claim 13.

BACKGROUND

[0002] European Patent no. 0 403 494 B1 discloses a brush handle for releasably receiving and supporting bristle brushes of the bottle cleaning type. Said handle generally consists of two elongated handle portions being connected to each other through a folding joint provided between first ends of said portions, such that the handle portions are foldable towards each other. In the folding joint a through-hole is provided, through which the shaft or stem of a twisted wire brush is inserted for positioning between the handle portions prior to the folding together thereof.

[0003] Said handle has proven to be very effective for use with interdental brushes for oral use, since it provides a firm grip for the fingers of the user and facilitates handling and manipulation of the brush in the mouth during the cleaning of teeth. However, practical use of the disclosed handle has revealed that it suffers from certain shortcomings, mainly having regard to the insertion of the brush stem or shaft into the handle and the locking of the handle portions to each other. Specifically, with the insertion opening provided in the folding joint, the inserted brush shaft is only supported by a thin flange prior to the locking together of the handle portions. This in turn means that during folding of the handle portions the brush shaft remains practically unsupported and cannot be easily guided into the correct position between the handle portions. The user holds one handle portion with each hand during the folding operation and accordingly has no hand free for holding and guiding the brush. It may therefore easily happen that the brush even falls out from the handle altogether during the folding operation.

[0004] Another limitation of the described handle is that it does not provide the optimum locking action to secure the brush in position, since the brush shaft is primarily maintained in position by gripping means provided in connection with the folding joint and engaging the brush shaft over a very restricted portion of its length and only with a clamping action. The clamping or locking action of the other parts of the handle portions is rather weak.

[0005] U.S. Patent No. 5 758 382 discloses a brush handle for use with interdental brushes and having the same general design as that discussed above, specifi-

cally with regard to the fact that it consists of two handle portions being connected to each other at one end through a folding joint and that the shaft insertion opening is provided in the area of the folding joint. In this case the shaft insertion opening is provided in one side of the handle, intended for introducing the brush shaft in a sideways direction with regard to the longitudinal extension of the handle. With a practical width of the handle this fact necessitates the use of brushes having a very short shaft portion, which in turn results in a very restricted support for the brush shaft prior to folding the handle portions, even more so since the insertion opening has the shape of a groove providing no support around the entire circumference of the brush shaft. Accordingly this latter handle provides even less support and in fact the brush may very easily fall out of the handle before and during folding.

[0006] Like the one described above this latter handle provides a limited locking action to secure the brush in position, since the brush shaft is primarily maintained in position by gripping means provided in at the folding joint and engaging the brush shaft only with a clamping action.

[0007] Finally U.S. Patent no. 5 293 661 discloses a handle of the same general type, but having a hinge type of folding joint in which the insertion opening is formed. This is basically a comparatively complex and expensive type of joint and the provision of the insertion opening in the joint makes the design even more complex and costly.

SUMMARY

[0008] The general object of the present invention is to provide an improved brush handle that is easy to handle specifically with regard to the installation of the brush therein, and which provides appropriate support for the installed brush, while still being relatively uncomplicated and inexpensive to manufacture.

[0009] In accordance with the invention this general object is achieved by providing a brush handle of the kind specified in the introduction, having a brush shaft insertion opening provided in a free end of one of the handle portions, in which one or more supports are also provided for supporting part or parts of the shaft before and during the locking together of the handle portions. By providing the insertion opening adjacent a free end of one of the handle portions it will basically be possible to fold the handle portions against each other while simultaneously supporting or holding the brush with the aid of the hand holding the handle portion being provided with the insertion opening. Therefore it will not only be possible to eliminate the danger of the brush falling completely out of the handle, but will also be quite easy to hold or guide the brush shaft to the correct position in the handle during the folding action.

[0010] In an embodiment of the basic invention a first support for the brush shaft is formed by the insertion

opening which in turn is in the shape of a through-bore formed in an enlarged head at the free end of the handle portion. In combination with the basic features of the invention this design even further facilitates the installation of the brush in the handle.

[0011] Yet another embodiment of the invention suggests the provision of a further support for the brush shaft in a position inwardly of the enlarged head, with respect to the longitudinal extension of said handle portion, for positively retaining the brush shaft in the handle portion before and during the interconnection of the handle portions. With this design, the brush will be securely retained in the handle even before the handle portions are folded together, irrespective of the actual position of the handle or if it is held with only one hand.

[0012] Another object of the invention is to provide means for achieving excellent locking of the brush shaft to the handle in the condition ready for use, i.e. in the folded and interlocked condition of the two handle portions.

[0013] In accordance with the invention this further object is achieved by providing means for positively locking the brush shaft to the handle in the interconnected condition of the handle portions, and more specifically by providing a protrusion on one of the handle portions, said protrusion serving to bend a part of the brush shaft into a cavity in the other handle portion.

[0014] According to another aspect of the invention the brush handle is used specifically for supporting and holding interdental brushes for oral use.

[0015] Further embodiments of the invention are specified in the enclosed, dependent subclaims, and will be discussed further below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The invention, together with further objects and advantages thereof, may best be understood by making reference to the following description taken together with the accompanying drawings, in which:

- FIG. 1 is a plan view from one side of an embodiment of a brush handle according to the invention;
- FIG. 2 is a plan view from above of the embodiment illustrated in fig. 1;
- FIG. 3a is a front view of the embodiment illustrated in fig. 1;
- FIG. 3b is a partially sectioned side view of an outer, first end of one of the handle portions as illustrated in fig. 2;
- FIG. 4 is a partially sectioned view corresponding to fig. 1, but with a miniature brush shaft inserted into a first handle portion; and

FIG. 5 illustrates the handle with brush of fig. 4 after the handle portions have been folded and locked together.

5 DETAILED DESCRIPTION

[0017] The general design of an exemplifying embodiment of the brush handle 1 according to the invention will now be described with reference primarily to drawing figures 1, 2 and 3a, 3b. The brush handle 1 has a generally elongate shape suitable for being gripped with the fingers of one hand when in its is in its later described, folded condition. It consists of two handle portions 2 and 3 being connected to each other at one of their ends 2b and 3b, respectively. In the illustrated embodiment the connection 13 between the two handle portions 2, 3 is formed by a so called living handle of the kind employed for the handles of U.S. Patent No. 5 758 382 and European Patent no. 0 403 494 B1, namely a relatively thin membrane formed by a weakening of the material of the handle. Naturally the invention is not restricted to using such a living joint. Any kind of joint permitting folding of the two handle portions towards each other could be employed, such as a hinge type of joint.

[0018] In order to provide a more comfortable grip for the fingers around the handle 1 in its folded condition (Fig. 5) the outer edges of the handle portions are preferably rounded (not specifically shown in the drawings). Forming recessed areas 21 and 23 in the outer surface of the handle portions 2,3 provides an even further improved and comfortable grip for the fingers.

[0019] The free end 2a of a first one of the handle portions 2 is provided with an enlarged head 4 having an outwardly, i.e. towards the free end of the handle portion 2, generally tapering shape. A seat 12 is formed in an inner end face 4b of said enlarged head 4 facing towards the folding joint 13. When the handle portions 2, 3 are being folded together the seat 12 is engaged by a latch 10 provided at the free end 3a of the second or other handle portion 3, whereby the handle portions are securely locked together in the folded condition.

[0020] The enlarged head 4 of the first handle portion 2 is furthermore provided with a centrally located through-bore 5 serving as an insertion opening for the brush 17 which will be described below in connection with drawing figures 4 and 5. The through-bore 5 extends from an outer end face 4a of the enlarged head 4 and to the above mentioned inner end face 4b thereof. The inner wall 5a of the bore 5 is generally cylindrical, except for the outer end portion 5b thereof, which has an outwardly widening shape and ends in a relatively wide mouth opening in the end face 4a. This design has the purpose of increasing the effectiveness of the cleaning action of the brush 17 by allowing the brush portion 18 of the brush to be more flexible. Finally, the bore 5 continues in a groove 15 provided in an edge of the handle portion and cooperating with a corresponding groove 11 formed in the latch 10 of the second handle

portion 3.

[0021] In use the inner wall 5a of the through-bore serves as a first support for the shaft or stem 19 of the brush 17. The length of the enlarged head 4 and consequently of the bore 5 should be chosen so as to provide the appropriate support for the shaft 19 of the brush 17. The actual length thereof may vary for different types of brushes. Inwardly of the enlarged head 4 an additional support 16 is formed in said first handle portion 2, at a position inwardly of the enlarged head 4 with respect to the longitudinal extension of said handle portion 2. The additional support 16 is provided for positively retaining the brush shaft 19 in the handle 2 prior to folding the handle portions 2, 3 together. In the illustrated embodiment said positively retaining additional support 16 consists of two projections 6,7 generally positioned so as to straddle the longitudinal center line C of the handle 1. Thus, the two projections 6, 7 are provided adjacent each other and spaced apart for forming a shaft receiving passage 20 (see fig. 3) therebetween, said shaft receiving passage 20 being generally aligned with the insertion opening 5 in the enlarged head 4.

[0022] With reference to fig. 3b it is seen that at least parts of the shaft receiving passage 20 are narrower than the diameter of the insertion opening 5 and will therefore be narrower than the shaft dimension of the appropriate brush 17 to be used with the handle 1. Specifically, the shaft receiving passage 20 is formed by facing side surfaces of the projections 6, 7. Said facing side surfaces of the projections 6, 7 form a sharp angle between them, pointing in a direction away from the enlarged head 4 and thereby form a passage 20 narrowing in the later described shaft insertion direction A. The projections 6, 7 are formed from a resilient material allowing widening of the passage by the insertion of the shaft 19 of the brush 17 therebetween, whereby the additional support 16 resiliently locks the brush to said one handle portion 2 during folding and locking of the two handle portions 2, 3.

[0023] A shaft locking protrusion 9 is provided at the free end 3a of the second handle portion 3, said protrusion 9 serving the purpose of lockingly engaging the shaft 19 of the brush 17 when said handle portions 2, 3 are brought to their interconnected condition with the shaft inserted between them. In the interconnected condition of said handle portions 2, 3 said shaft locking protrusion 9 projects into a receiving cavity 2c (fig. 4) in the first handle portion 2 with the purpose of engaging the shaft 19 to bend it and likewise force it into the cavity 2c. In order to save material the handle portions are in the illustrated embodiment provided with an inner cavity extending almost between their first and second ends, but it should be emphasized that for the function of the shaft support and locking means it would be sufficient to provide a cavity only in the first handle portion 2, extending from the enlarged head 4 to approximately the centre of the projections 6, 7.

[0024] Furthermore, two jaws 8 separated by a

groove 14 may be provided at the first free end 3a of the second handle portion 3, said jaws forming a clamp intended to engage the projections 6, 7 in the interconnected condition of the handle portions 2, 3. Specifically, the purpose of the clamps 8 is to press the projections together for additionally locking the shaft 19 that has been inserted therebetween.

[0025] The practical use of the handle 1 will now be described with reference to figs. 4 and 5 and to some extent also to figs. 3a and 3b. In the illustrated embodiment the handle is used with a twisted wire brush of the bottle brush type, which are commonly used as interdental brushes for oral use. It should be emphasized, however, that in its basic design the handle of the invention may, with only small modifications, be used for other types of brushes having an elongate shaft or stem, such as pencil brushes used for applying cosmetic products.

[0026] The brush 17, having a brush portion 18 with bristles and a twisted wire shaft portion 19, is installed in the handle 1 by introducing the shaft 19 into the bore 5 from the side of the outer end face 4a. It should be noted that the handle need not be held in a straight or unfolded position corresponding to fig. 4 when the brush is introduced. Instead, the handle portions 2, 3 may be kept in an optional folded position, as long as the shaft locking protrusion 9 and the two jaws 8 do not interfere with the insertion of the brush shaft 19. Consequently, it will not be necessary to open the handle fully when exchanging the brush 17.

[0027] Once introduced into the bore 5 the brush shaft 19 is pushed further into the enlarged head 4 in the direction A (fig. 3). Eventually its free end reaches the area of the inner cavity 22 of the first handle portion 2 and enters the shaft receiving passage 20 formed between the projections 6, 7. Up to this point the shaft is reliably supported by the inner wall 5a of the bore 5, completely surrounding the shaft over an essential portion of its length, and to some extent also by the groove 15. Should this support for some reason not be sufficient for holding the brush 17 in place, the inventive design, with the insertion opening positioned in the free end of one handle portion instead of in the area of the folding joint, permits the user to support the brush with his hand holding said first handle portion 2. This feature considerably facilitates handling of the brush handle during installation of the brush.

As it proceeds toward the narrower part of the passage 20 the shaft contacts the inner surfaces of the projections 6, 7 and pushes them apart. Due to the resiliency of the projections 6, 7 they will clamp the brush shaft 19 sufficiently to prevent it from falling out of the handle 1 irrespective of how the handle is turned and manipulated. Another advantageous effect of said clamping action is that it facilitates adjusting the brush to the longitudinal position suitable for each user. Such adjustments are much easier to perform and maintain if the shaft is subjected to a biasing force than if it could move freely in the longitudinal direction.

[0028] With the brush 17 in position the second handle portion 3 is folded all the way into engagement with the first handle portion 2, i.e. so that the latch 10 engages the seat 12 of the enlarged head and locks the second handle portion 3 securely to the first handle portion 2. The introduction of the latch 10 into the seat 12 is accomplished through a combination of the slanted outer surface of the latch 10 and the resiliency of the material of the handle, said material preferably being a plastic material suitable for injection molding.

[0029] During the final folding movement towards the interlocked position the shaft locking protrusion 9 engages the brush shaft 19 and bends the shaft 19 down into the cavity 22, as is illustrated in fig. 5. This bending down of the shaft produces a firm positive locking of the shaft 19 to the handle 1, said locking action being further increased by the fact that the shaft is simultaneously pushed down toward the bases of the projections 6, 7 which extend upwardly from the bottom of the cavity 22. The flexibility of the projections decreases towards their base so that their clamping action against the shaft increases as the latter is pushed down in the described manner. If present, the jaws 8 likewise serve to enhance the grip of the projections 6, 7 on the shaft, since they apply an increasing inwardly directed pressure against the projections 6, 7 as the folding action is completed.

[0030] When the brush 17 is to be replaced the latch 10 is disengaged from the seat 12 by slightly bending down the free ends of the folded handle 1 until the latch 10 snaps out, this likewise being possible due to the resiliency of the material. Finally the handle portions are unfolded at least until the protrusion 9 has left the cavity 22 and the jaws 8 have released the projections 6, 7. Subsequently the old brush 17 is pulled out from the first handle portion 2, during which the pliable shaft 19 straightens out so as to pass through the bore 5.

[0031] By reading the description it should now be clear that the initially stated objects are well achieved by means of the present invention. In summary, the provision of the insertion opening 5 at a free end of one of the handle portions 2, 3 instead of in the area of the folding joint 13 greatly facilitates the installation of the brush 17 in the manner described above, produces effective support for the brush shaft 19 during installation and secure locking of the brush 17 to the handle 1 in the folded condition. With the addition of the second support 16 the brush 17 will be retained so securely in the handle 1 that it may be held in any position, and may even be put down temporarily without any danger of the brush falling out of the handle or even being displaced therein.

[0032] In an alternative embodiment of the invention, not illustrated in the drawings, the handle may consist of two separate handle portions being provided with co-operating connectors of any conventional type adjacent their second ends 2b, 3b, in addition to the seat and latch respectively of their first ends. As mentioned above, the invention is not restricted to the use of the jaws 8 of the second handle portion 3, which are optional.

[0033] It should also be noted that, within the scope of the invention, the first support in the enlarged head does not need to be a through-bore enclosing the shaft around its entire circumference and along the full length of the support. Instead, the first support could be partly or entirely formed as an upwardly open groove receiving the brush shaft. Likewise, the support must not be positioned with its support surface coinciding with or even being parallel with the center line of the handle.

[0034] Although the invention has been described above with specific reference to the illustrated embodiment thereof, it should be pointed out that this embodiment is given in order to exemplify the invention and not with the intention of restricting the invention. Accordingly the invention is intended to cover all the various changes, variations and modifications that are obvious to the man skilled in the art. The scope of the invention shall therefore only be defined by the enclosed patent claims.

Claims

1. A brush handle (1) for releasably receiving a brush (17) having a brush portion (18) at one end and a shaft portion (19) at the other end, the handle being formed by two interconnectable, generally elongated handle portions (2, 3) intended to lockingly receive the shaft portion therebetween in their interconnected condition and said handle having an insertion opening (5) for introducing the shaft portion (19) between the handle portions in a general shaft insertion direction (A), **characterized in** that the insertion opening (5) is provided in a first one (2) of the handle portions (2, 3) adjacent a first free end (2a) thereof and in that adjacent the first free end thereof said first handle portion (2) is provided with at least one support (5a, 16) for supporting a part or parts of the shaft (19) before and during the locking together of the handle portions (2, 3).
2. A brush handle (1) according to claim 1, **characterized** in that said first handle portion (2) is formed with an enlarged head (4) at the first end (2a) thereof, in that the insertion opening (5) is formed through said enlarged head (4), extended generally in the longitudinal direction of the handle portion, and in that a first support (5a) is formed by said opening (5).
3. A brush handle (1) according to claim 2, **characterized** in that the insertion opening (5) is formed by a through-bore (5) extended through the enlarged head (4), from an outer end surface (4a) to an inner end surface (4b) thereof, the inner wall (5a) of the through-bore (5) forming said first support (5a).
4. A brush handle (1) according to claim 2 or 3, **characterized** in that an additional support (16) is

formed in said one handle portion (2), at a position inwardly of the enlarged head (4) with respect to the longitudinal extension of said handle portion (2), said additional support (16) positively locking the brush shaft (19) to the handle prior to folding the handle portions (2, 3) together.

5. A brush handle (1) according to claim 4, **characterized** in that the additional support (16) is formed by two projections (6,7) provided adjacent each other and spaced apart for forming a shaft (19) receiving passage (20) therebetween, said shaft receiving passage (20) being generally aligned, along the shaft insertion direction (A), with the insertion opening (5) in the enlarged head (4).

6. A brush handle (1) according to claim 5, **characterized** in that at least parts of the shaft (19) receiving passage (20) are narrower than the outer dimension of the shaft (19) and in that the projections (6, 7) are formed from a resilient material allowing widening of the passage by the insertion of the brush (17) shaft (19) therebetween, whereby the additional support (16) resiliently locks the brush to said one handle portion (2) during interconnection of the two handle portions (2, 3).

7. A brush handle (1) according to claim 6, **characterized** in that the shaft receiving passage (20) is formed by facing side surfaces of the projections (6, 7) and in that said facing side surfaces of the projections form a sharp angle between them, pointing in a direction away from the enlarged head (4), such that the shaft receiving passage narrows in the shaft insertion direction (A).

8. A brush handle (1) according to any of the preceding claims, **characterized** in that a shaft (19) locking protrusion (9) is provided at a first free end (3a) of the other handle portion (3), said protrusion (9) lockingly engaging the shaft (19) of the brush (17) when said handle portions (2, 3) are in their interconnected condition with the shaft inserted between them.

9. A brush handle (1) according to claim 8 for use with a brush (17) having a pliable shaft (19), **characterized** in that said shaft locking protrusion (9) in the interconnected condition of said handle portions (2, 3) projects into a receiving cavity (2c) in the first handle portion (2), engaging the shaft (19) to bend it and likewise force it into the cavity (2c).

10. A brush handle (1) according to any of claims 5-9, **characterized** in that a clamp (8) is provided at a first free end (3a) of the other handle portion (3), said clamp straddling the projections (6, 7) in the interconnected condition of said handle portions (2,

3), thereby clamping the projections together for additionally locking the shaft (19) inserted between them.

11. A brush handle (1) according to any of the preceding claims, **characterized** in that the handle portions (2, 3), at a second end (2b and 3b, respectively) thereof, are permanently connected to each other by a folding joint (13) and in that cooperating connectors (10, 12) are provided adjacent their first ends (2a, 3a) for securely locking together the handle portions in the folded condition.

12. A brush handle (1) according to any of claims 1-10, **characterized** in that the handle (1) consists of two separate handle portions (2, 3) being provided with cooperating connectors (10, 12) at least adjacent their first and second ends (2a, 3a and 2b, 3b)

13. The use of a brush handle (1) according to any of claims 1-12 for releasably supporting an interdental brush (17) for oral use.

FIG. 1

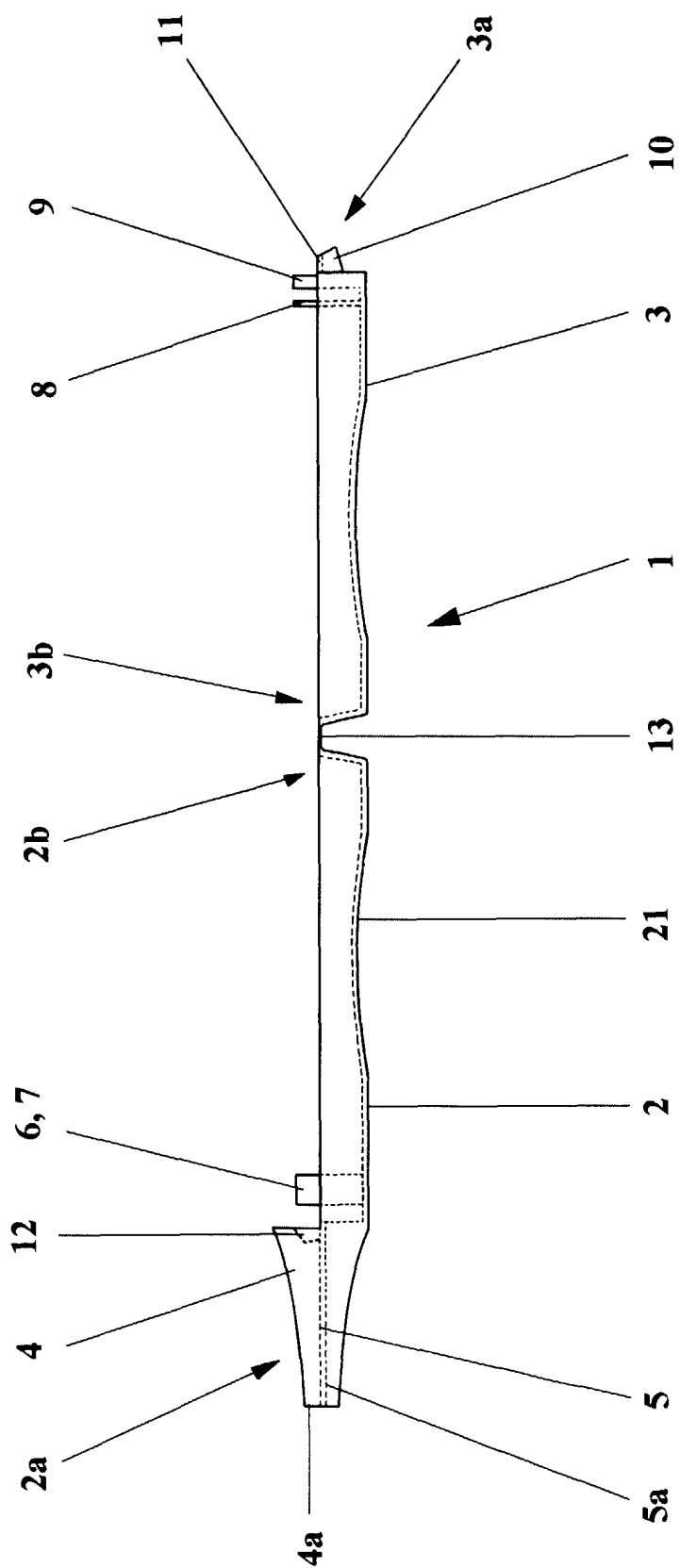


FIG. 2

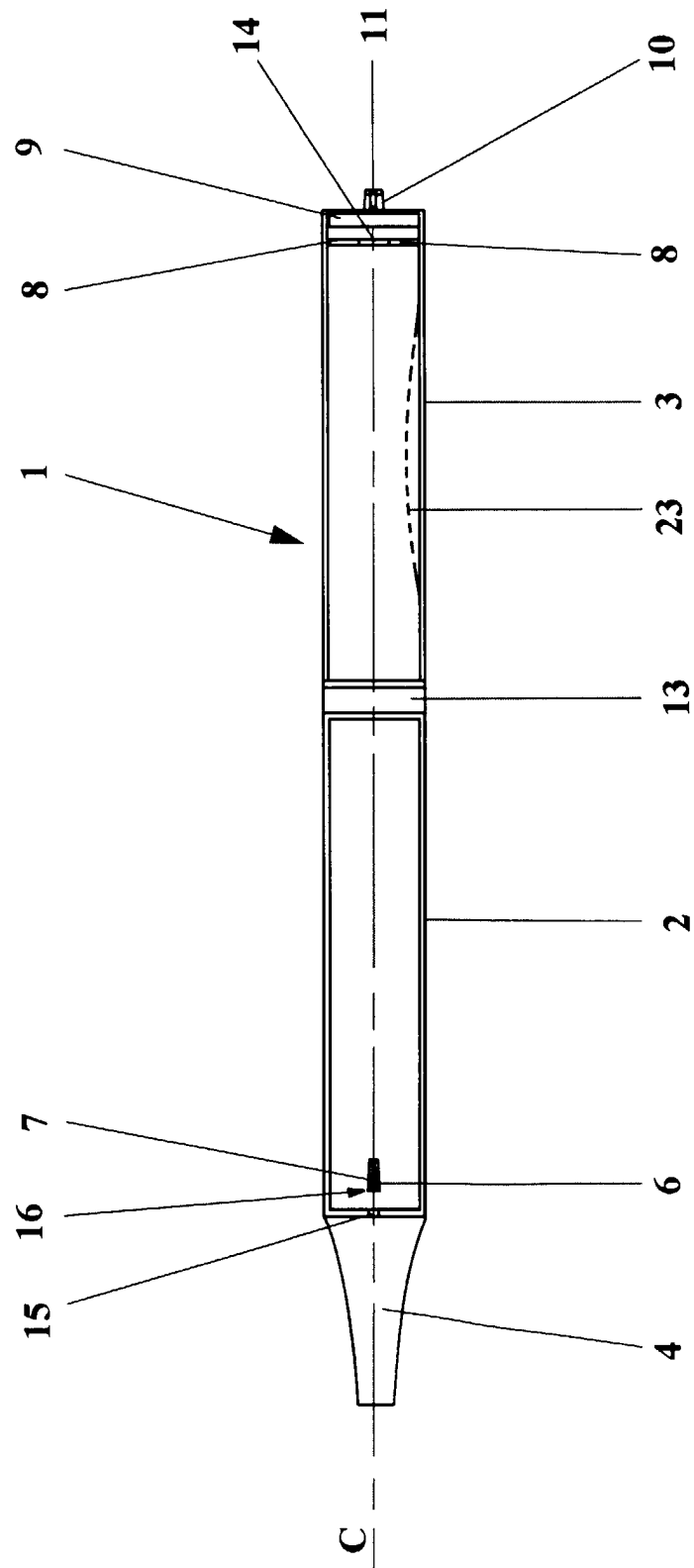


FIG. 3a

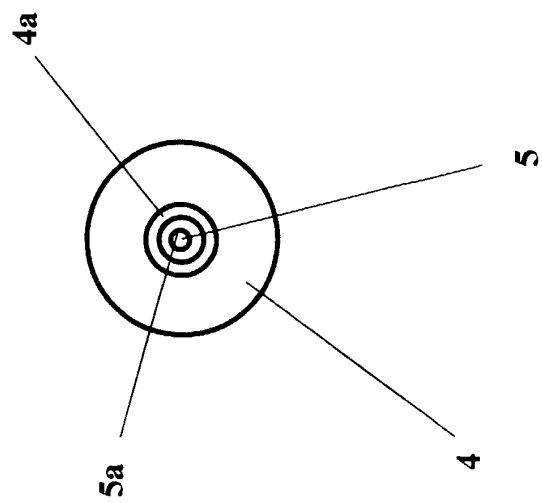


FIG. 3b

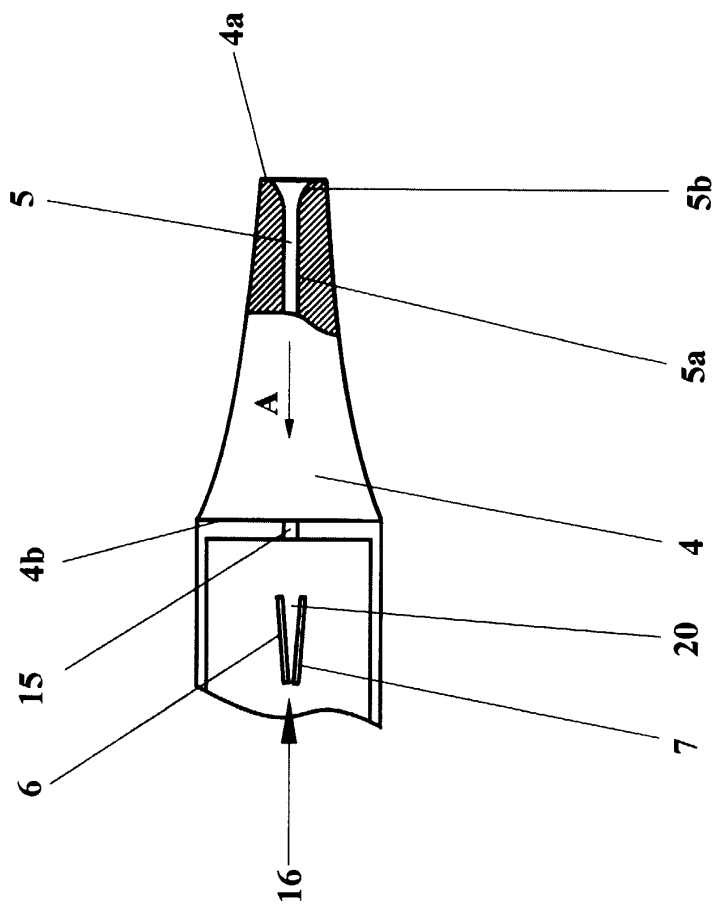


FIG. 4

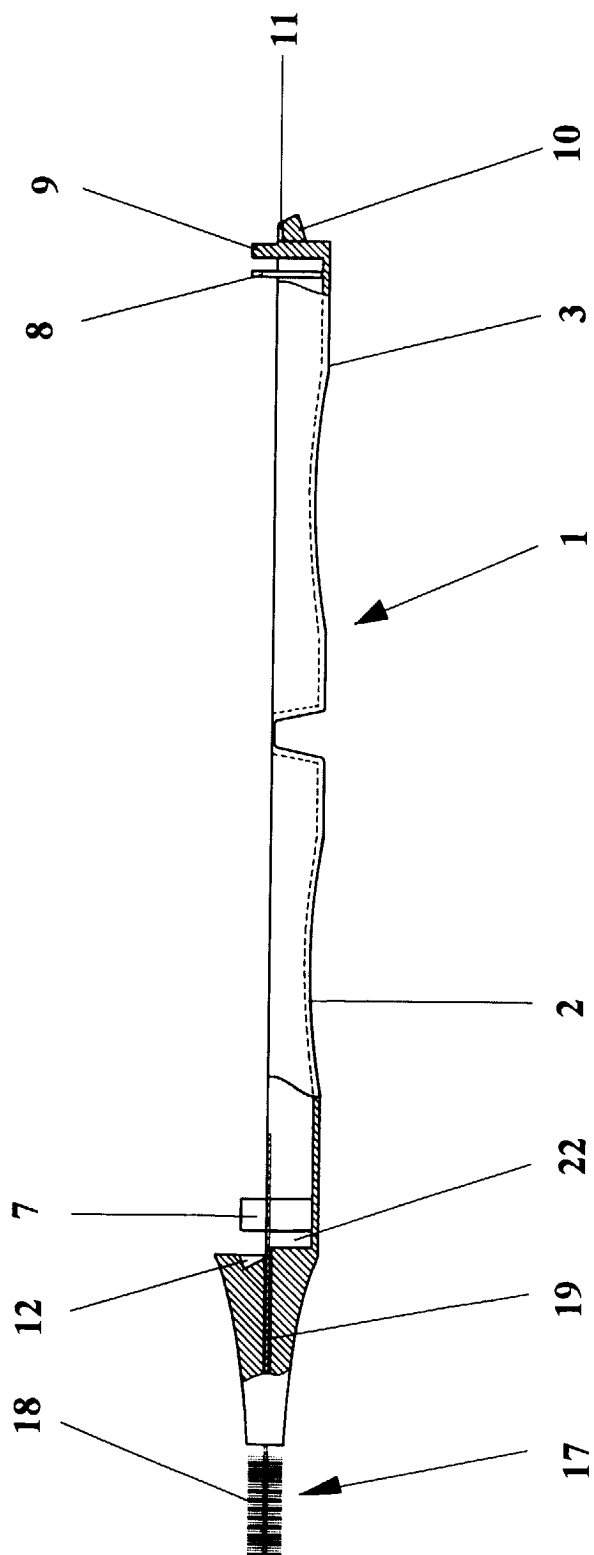
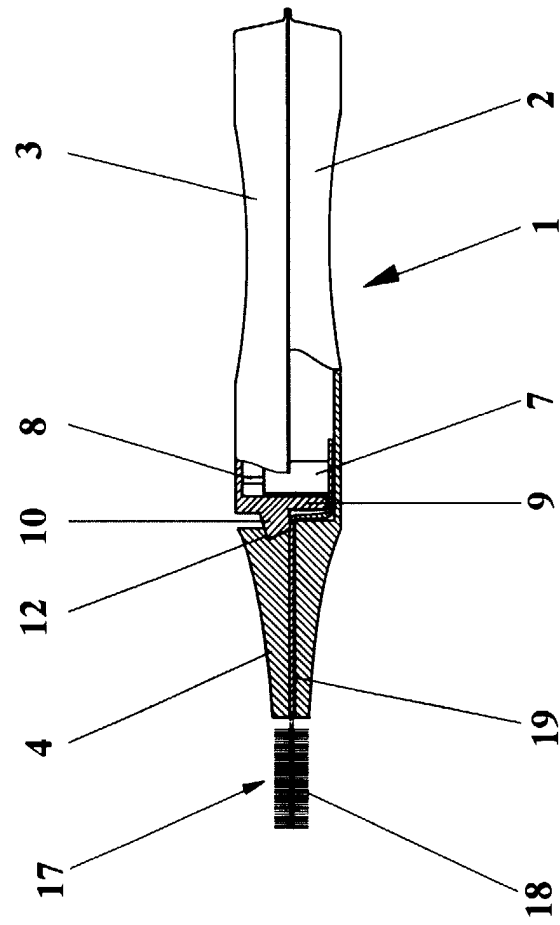


FIG. 5





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 99 10 8258

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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			

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 99 10 8258

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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