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(54) **RAZOR HANDLES**

(57) The application relates to a razor handle 30, a razor including the razor handle, and a method of attaching a blade assembly 10 to the razor handle. The razor handle comprising a rigid first arm 30A and rigid second arm 30B, each of the first and second arms having a top portion 32A, 32B for connection to a blade assembly and a pivot portion 36A, 36B for pivoting the first and second arms relative to each other; a flexible element 20 positioned between the first and second arms, the flexible element being reversibly deformable between a first configuration and a second configuration.

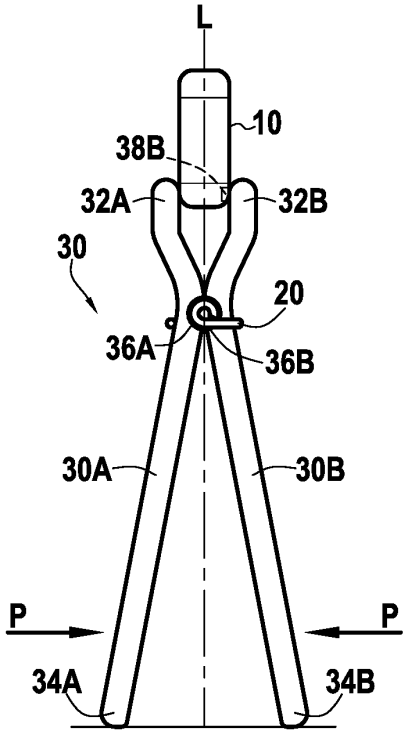

FIG.1B

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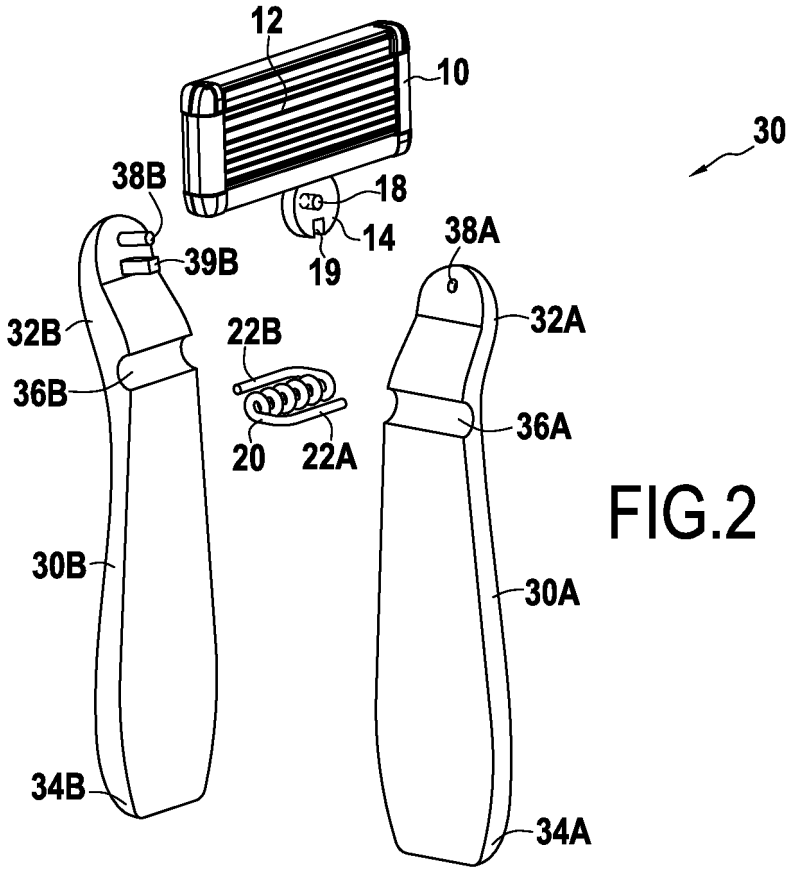
12
10
30
38B
18
14
38A
39B
19
32B
22B
32A
36B
36A
20
22A
30B
30A
34B
34A

FIG.2

Description

[0001] The present disclosure relates to a razor handle, and more specifically, to a razor handle comprising a first arm, a second arm, and a flexible element that is adapted to allow the first and second arms to pivot relative to each other. Additionally, a razor may include the razor handle and blade assembly including at least one blade. The blade assembly may be detachable from the handle. The blade assembly may be interchangeable, in particular, when a blade or blades of the blade assembly have been blunted. The razor may be specifically adapted for shaving facial, head, and/or body hair.

BACKGROUND

[0002] Contemporary razor assemblies include razor handles that have interchangeable heads. These assemblies can be overly complex and require the integration of a plurality of interlocking components. These assemblies are more costly and more difficult to use. Additionally, it is common practice for these assemblies to use a button release mechanism. These release mechanisms may be small and difficult to manipulate. Additionally, these buttons may be difficult for a user to manipulate if the surface of the button is not dry.

[0003] To address this problem, shaving blade assemblies comprising a flexible release mechanism have been developed. See, for example, US 4 392 303 A.

SUMMARY

[0004] To address the problems of razors having complex and difficult to use release mechanisms, a razor handle according to claim 1 is provided.

[0005] In particular, a razor handle may comprise a rigid first arm and rigid second arm, each of the first and second arms having a top portion for connection to a blade assembly and a pivot portion for pivoting the first and second arms relative to each other; and a flexible element positioned between the first and second arms, the flexible element being reversibly deformable between a first configuration and a second configuration.

[0006] This configuration of the handle provides a simplified solution to attaching and detaching blade assemblies. This simplified configuration uses fewer interlocking components which can improve the reliability of the device and reduce the manufacturing cost. Furthermore, this configuration enhances a user's ability to manipulate the handle in dry and wet conditions by providing an easy to use alternative to button release mechanisms.

[0007] The flexible element may be connected to and positioned between the respective pivot portions of the first and second arms.

[0008] The flexible element may comprise an elastomer.

[0009] The flexible element may be configured to apply a return force on the first and/or the second arm thereby urging the handle into a first, closed, configuration.

[0010] The flexible element may comprise a metal.

[0011] The flexible element may comprise a spring.

[0012] The razor handle may comprise a bladder connected to and positioned between the first and second arms. The bladder may be configured to expel and intake air.

[0013] The first arm may have a first lower portion and the second arm may have a second lower portion. The bladder may be positioned between the first and second lower portions of the first and second arms.

[0014] The flexible element may be the bladder and a pivoting pin may further be arranged between the first and second arms.

[0015] The flexible element may be monolithically formed with the first and second arms.

[0016] A razor comprises the aforementioned razor handle and a blade assembly that is configured to be attached to the top portion of the first and second arms of the razor handle.

[0017] The first and second arms of the razor handle may further comprise a return mechanism or a recess that is configured to control movement of the blade assembly.

[0018] The return mechanism may comprise at least one flexible component.

[0019] The first and second arms of the handle may further comprise an attachment portion positioned at respective top portions of the first and second arms.

[0020] A method of attaching a blade assembly to a razor handle is provided. The method comprises: providing the aforementioned razor handle; applying a force on the first and second arms such that the flexible element is urged from the first configuration to the second configuration; and inserting the blade assembly between the respective top portions of the first and second arms.

[0021] The above summary is not intended to describe each and every implementation of the concept. In particular, selected features of any illustrative embodiment within this disclosure may be incorporated into additional embodiments unless clearly stated to the contrary.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] The disclosure may be more completely understood in consideration of the following detailed description of aspects of the disclosure in connection with the accompanying drawings, in which:

FIG. 1A is a front view of an exemplary razor in a first configuration;

FIG. 1B is a side view of the exemplary razor in the first configuration;

FIG. 1C is a front view of the exemplary razor in a second configuration;

FIG. 2 is an exploded view of the exemplary razor of FIG. 1A;

FIG. 3A is a front view of another exemplary razor

in a first configuration;

FIG. 3B is a side view of the exemplary razor of FIG. 2A in the first configuration;

FIG. 4A is a front view of another exemplary razor in a first configuration;

FIG. 4B is a side view of the exemplary razor of FIG. 3A in the first configuration;

FIG. 5A is a side view of another exemplary razor in a first configuration;

FIG. 5B is an exploded view of the exemplary razor of FIG. 5A; and

FIG. 6 is a front view of the exemplary razor of FIG. 1A showing the razor head pivoted relative to the handle.

[0023] While aspects of the disclosure are amenable to various modifications and alternative forms, specifics thereof have been shown by way of example in the drawings and will be described in detail. It should be understood, however, that the intention is not to limit aspects of the disclosure to the particular embodiment described. On the contrary, the intention of this disclosure is to cover all modifications, equivalents, and alternatives falling within the scope of the disclosure.

DETAILED DESCRIPTION

[0024] As used in this disclosure and the appended claims, the singular forms "a", "an", and "the" include plural referents unless the content clearly dictates otherwise. As used in this disclosure and the appended claims, the term "or" is generally employed in its sense including "and/or" unless the content clearly dictates otherwise.

[0025] The following detailed description should be read with reference to the drawings. The detailed description and the drawings, which are not necessarily to scale, depict illustrative aspects and are not intended to limit the scope of the present disclosure. The illustrative aspects depicted are intended only as exemplary.

[0026] FIGS. 1A and 1B show a razor having a blade assembly 10, flexible element 20, and handle 30. The blade assembly 10 may have at least one blade 12. In this embodiment, a plurality of blades 12 are shown, however, it is contemplated that the blade assembly 10 may have any number of blades 12. Additionally, the blades 12 that are shown are elongated in shape; however, it is contemplated that the blades 12 may be formed into any other suitable shape. Additionally, each blade may be one piece, bent to form an angle, or may comprise a blade support attached to it.

[0027] The blade assembly 10 may also include a connection portion for connecting with handle 30, the connection portion 14 will be discussed in detail with FIG. 6.

[0028] The handle 30 may be elongated and extend along a vertical central axis L-L. The handle 30 may include a first arm 30A and a second arm 30B. The first and second arms 30A, 30B may be rigid. Each of the first and second arms 30A, 30B may have a top portion 32A, 32B for connection to the blade assembly 10, a pivot portion 36A, 36B for pivoting the first and second arms 30A, 30B relative to each other, and respective bottom portions 34A, 34B configured to allow a user to manipulate the handle 30.

[0029] The handle 30 may be shaped to better adapt to the natural contours of a hand. The blade assembly 10 may be interchangeable with the handle 30.

[0030] FIG. 2 shows an exploded view of the razor. The flexible element 20 has a first end 22A and a second end 22B. The first end 22A may be attached to the pivot portion 36A of the first arm 30A of the handle 30. The second end 22B may be attached to the pivot portion 36B of the second arm 30B of the handle 30.

[0031] Turning to FIGS. 1B and 1C, when the handle 30 is assembled, the flexible element 20 may be configured to deflect between a first configuration and a second configuration thereby allowing the handle to assume a first, closed, configuration (FIG. 1B) and a second, open, configuration (FIG. 1C).

[0032] In operation, when a user wants to insert or remove a blade assembly 10 into the handle 30, they can apply a pressure on the respective lower portions 34A, 34B of the handle 30. This pressure is transferred to the flexible element 20 and urges the flexible element 20 from the first configuration to the second configuration. The first and second arms 30A, 30B pivot about their pivot portions 36A, 36B such that the top portions 32A, 32B move away from each other such that a blade assembly 10 may be inserted or removed from the handle 30. Once the user stops applying pressure to the first and second arms 30A, 30B or the handle, the flexible element 20 applies a return force on the first and second arms 30A, 30B and urges back the handle 30 into the first, closed, configuration.

[0033] The flexible element 20 may be formed of any appropriate material permitting the flexible element to elastically bend, for example, a metal or and elastomer. The flexible element may be formed as a helical spring.

[0034] FIGS. 3A-3B show a razor according to a second example. The razor is the same as the razor in FIGS 1A-2 except for the handle 40. Therefore, the detailed description of similar features will be omitted and like reference numerals will be used.

[0035] The handle 40 may be elongated and extend along a vertical central axis L-L. The handle 40 may include a first arm 40A and a second arm 40B. The first and second arms 40A, 40B may be rigid. Each of the first and second arms 40A, 40B may have a top portion 42A, 42B for connection to the blade assembly 10, a pivot portion 46A, 46B for pivoting the first and second arms 40A, 40B relative to each other, and respective bottom portions 44A, 44B configured to allow a user to manipulate the handle 40.

[0036] The flexible element 50 may bridge the pivot portions 46A, 46B of the first and second arms 40A, 40B. The flexible element 50 may be formed of any appropriate material permitting the flexible element 50 to elastically

bend. The flexible element 50 may be a metal. In alternatives, the flexible element 50 may be an elastomer. In some cases, the flexible element may be monolithically formed with the first and second arms 40A, 40B of the handle 40. Additionally, it is envisioned that the flexible element 50 and the first and second arms 40A, 40B of the handle 40 may be metal and monolithically formed. Alternatively, the flexible element may be interlocked in respective orifices of the first and second arms 40A, 40B of the handle 40.

[0037] The operation of handle 40 is the same as the operation of handle 30 in that a user may apply a pressure on the lower portions 34A, 34B of the handle to insert or release the blade assembly 10.

[0038] FIGS. 4A-4B show a razor according to a third example. The razor is the same as the razor in FIGS 1A-2 except that the handle 60 includes a bladder 70 that is connected to the lower portion 60A, 60B of the arms 60A, 60B.

[0039] Therefore, the detailed description of similar features will be omitted and like reference numerals will be used.

[0040] The handle 60 may be elongated and extend along a vertical central axis L-L. The handle 60 may include a first arm 60A and a second arm 60B. The first and second arms 60A, 60B may be rigid. Each of the first and second arms 60A, 60B may have a top portion 62A, 62B for connection to the blade assembly 10, a pivot portion 66A, 66B for pivoting the first and second arms 60A, 60B relative to each other, and respective bottom portions 64A, 64B configured to allow a user to manipulate the handle 60. The respective bottom portions 64A, 64B may be spaced from each other as to provide the pivot movement between the first and the second arms 60A, 60B.

[0041] The bladder 70 may comprise a flexible waterproof film, for example an elastomer. The bladder 70 may be configured to encapsulate a fluid, for example air or water. The bladder 70 may form a watertight seal with the first and second arms 60A, 60B.

[0042] The operation of handle 60 is the same as the operation of handles 30 and 40 in that a user may apply a pressure on the lower portions 64A, 64B of the handle to insert or release the blade assembly 10. Additionally, the bladder 70 may be configured to apply a further return force or pressure on the first and second arms 60A, 60B when the handle 60 is manipulated from the first, closed, configuration to the second, open, configuration. Thus, the bladder 70 cushions the action of the flexible element 20.

[0043] FIGS. 5A-5B show a razor according to a fourth example. The razor 80 is the same as the razor in FIGS 1A-4B except that the pivoting action is caused by a pivoting pin 90 having a respective aperture 92 in the first and second arms 80A, 80B. The bladder 70 is connected to the lower portion 80A, 80B of the arms 80A, 80B and serves as the flexible element.

[0044] Therefore, the detailed description of similar features will be omitted and like reference numerals will be used.

[0045] The pivoting pin 90 and aperture 92 are configured to allow the first and second arms 80A, 80B to pivot relative to each other at the respective pivot portions 86A, 86B. The pivoting pin 90 may be located on the first arm 80A and the aperture 92 may be located on the second arm 80B, or vice versa.

[0046] The operation of handle 80 in this variation is the same as the operation of handle 60 in that a user may apply a pressure on the lower portions 84A, 84B of the handle 80 to insert or release the blade assembly 10 from the top portions 82A, 82B of the handle 80. Additionally, the bladder 70 is configured to flex and apply a return force or pressure on the first and second arms 80A, 80B when the handle 80 is manipulated from the first, closed, configuration to the second, open, configuration.

[0047] Referring to FIGS. 2 and 5, the blade assembly 10 may also include a connection portion 14 for connecting with handle 30. The connection portion 14 may be a through hole 18 configured to accept a corresponding protrusion. The handle 30 may include an attachment portion 38A, 38B. The attachment portion 38A, 38B may be positioned at respective top portions 32A, 32B of the first and second arms 30A, 30B of the handle 30. The attachment portion may include a protrusion 38B and corresponding aperture 38A. Either one of the first or second arms may have the protrusion 38B or corresponding aperture 38A. Furthermore, the manner of attaching the blade assembly 10 to the handle may comprise the connection portion 14 including protuberances and the attachment potion 38A, 38B including corresponding recesses or holes.

[0048] The blade assembly 10 may be positioned between the first and second arms 30A, 30B of the handle 30. In this configuration, the blade assembly 10 is configured to rotate relative to the handle 30 via the connection portion 14.

[0049] The connection portion 14 may include a recess 19 configured to cooperate with a return mechanism 39B. The return mechanism 39B may be disposed on either the first or second arm 30A, 30B. The return mechanism 39B may be flexible. The return mechanism 39B may comprise at least one flexible pin or finger or tongue. The return mechanism 39B may be adapted to exert a return torque on the recess 19. The return torque may be exerted on the recess 19 when the blade assembly 10 is rotated. The return torque generated by the return mechanism 39B may be in a range of 0 to 30 Nmm, between 10 and 30 Nmm, or between 15 and 25 Nmm.

[0050] An increase of the return toque may depend on the amount that the blade assembly 10 is rotated or the angle. The increase of the return toque per degree may lie between 0.5 Nmm and 2 Nmm, 0.67 Nmm and 2 Nmm, or between 1 and 1.67 Nmm. The return mechanism 39B may comprise any material having a high elasticity, for example, an elastomer. Although the return mechanism

39B is depicted on the handle 30, it is also envisioned that the return mechanism 39B may be formed on the blade assembly 10 while the handle 30 may have a corresponding recess. The return mechanism 39B may be configured to control the movement of the blade assembly 10.

[0051] Referring to FIG. 6, due to the connection between the blade assembly 10 and handle 30, the blade assembly 10 is configured to pivot relative to the handle 30. In particular, the blade assembly 10 may be configured to pivot within a range of $-20 \leq \alpha \leq +20$ relative to a central axis L-L of the handle 30. In operation, a razor assembly may have a blade assembly 10 in a rest position where the center of the blade assembly 10 is aligned or substantially aligned with the central axis L-L.

[0052] A user may place the blade assembly 10 in a first pivot position at an angle $+\alpha$ by applying a force on the blade assembly 10. This force transitions the return mechanism from an equilibrium state to a deformed state. Once the blade assembly 10 is released, or does not have the external force applied thereon, the blade assembly 10 may rotate back to the rest position by operation of the return mechanism 39B moving from the deformed state to the equilibrium state.

[0053] Although the described embodiments were provided as different exemplary embodiments, it is envisioned that these embodiments are combinable or, when not conflicting, the features recited in the described embodiments may be interchangeable.

[0054] Throughout the description, including the claims, the term "comprising a" should be understood as being synonymous with "comprising at least one" unless otherwise stated. In addition, any range set forth in the description, including the claims should be understood as including its end value(s) unless otherwise stated. Specific values for described elements should be understood to be within accepted manufacturing or industry tolerances known to one of skill in the art, and any use of the terms "substantially" and/or "approximately" and/or "generally" should be understood to mean falling within such accepted tolerances.

[0055] Although the present disclosure herein has been described with reference to particular embodiments, it is to be understood that these embodiments are merely illustrative of the principles and applications of the present disclosure.

[0056] It is intended that the specification and examples be considered as exemplary only, with a true scope of the disclosure being indicated by the following claims.

Claims

1. A razor handle (30, 40, 60, 80) comprising:

a rigid first arm (30A, 40A, 60A, 80A) and rigid second arm (30B, 40B, 60B, 80B), each of the first and second arms having a top portion (32A, 32B, 42A, 42B, 62A, 62B, 82A, 82B) for connection to a blade assembly (10) and a pivot portion (36A,36B, 46A, 46B, 66A, 66B, 86A, 86B) for pivoting the first and second arms relative to each other; and

a flexible element (20, 50, 70) positioned between the first and second arms, the flexible element being reversibly deformable between a first configuration and a second configuration.

2. The razor handle (30, 40) of claim 1, wherein the flexible element (20, 50) is connected to and positioned between the respective pivot portions (36A, 36B; 46A, 46B; 66A, 66B; 86A, 86B) of the first and second arms.

3. The razor handle (30, 40, 60, 80) of any of claims 1-2, wherein the flexible element (20, 50, 70) is configured to apply a return force on the first and/or the second arm (30B, 40B, 60B) thereby urging the handle (30, 40, 60) into a first, closed, configuration.

4. The razor handle (30, 40, 60) of any of claims 1-3, wherein the flexible element (20, 50) comprises a metal.

5. The razor handle (30, 60) of any of claims 1-4, wherein the flexible element (20) comprises a spring.

6. The razor handle (30, 40, 60, 80) of claims 1 -3, wherein the flexible element (20, 50, 70) comprises an elastomer.

7. The razor handle (60, 80) of any of claims 1-4, comprising a bladder (70) connected to and positioned between the first and second arms (60A, 60B, 80A , 80B), the bladder (70) being configured to expel and intake air.

8. The razor handle (60, 80) of claim 7, wherein the first arm (60A, 80A) has a first lower portion (64A, 84A) and the second arm (60B, 80B) has a second lower portion (64B, 84B), and wherein the bladder (70) is positioned between the first and second lower portions of the first and second arms.

9. The razor handle (60, 80) of any of claims 6-8, wherein the flexible element is the bladder (70) and a pivoting pin (90) is further arranged between the first and second arms (80A, 80B).

10. The razor handle (30, 40, 60, 80) of any of claims 1 - 9, wherein the flexible element (20, 50, 70) is monolithically formed with the first and second arms.

11. A razor comprising:
the razor handle (30, 40, 60, 80) of any one of claims 1-10; and a blade assembly (10) configured to be

attached to the top portion (32A,32B, 42A, 42B, 62A, 62B, 82A, 82B) of the first and second arms (30A, 30B, 40A, 40B, 60A, 60B, 80A, 80B) of the razor handle.

12. The razor claim 11, wherein one of the first and second arms (30A,30B, 40A, 40B, 60A, 60B, 80A, 80B) further comprises a return mechanism (39B) or a recess, configured to control movement of the blade assembly (10).

13. The razor of claim 12, wherein the return mechanism (39B) comprises at least one flexible component.

14. The razor of any of claims 11-13, wherein the first and second arms (30A,30B, 40A, 40B, 60A, 60B, 80A, 80B) of the handle (30, 40, 60, 80) further comprise an attachment portion (38A, 38B) positioned at respective top portions (32A,32B, 42A, 42B, 62A, 62B, 82A, 82B) of the first and second arms.

15. A method of attaching a blade assembly (10) to a razor handle (30, 40, 60, 80), wherein the method comprises:

providing a razor handle (30, 40, 60, 80) in accordance with any one of claims 1-10;
applying a force on the first and second arms (30A,30B, 40A, 40B, 60A, 60B, 80A, 80B) such that the flexible element (20, 50, 70) is urged from the first configuration to the second configuration; and
inserting the blade assembly between the respective top portions (32A,32B, 42A, 42B, 62A, 62B, 82A, 82B) of the first and second arms.

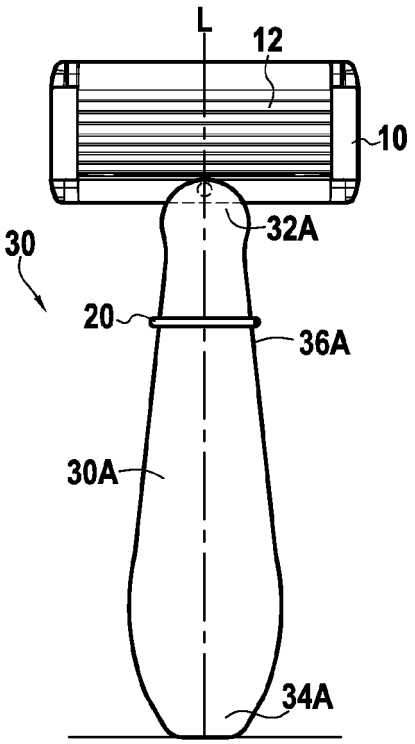

FIG.1A

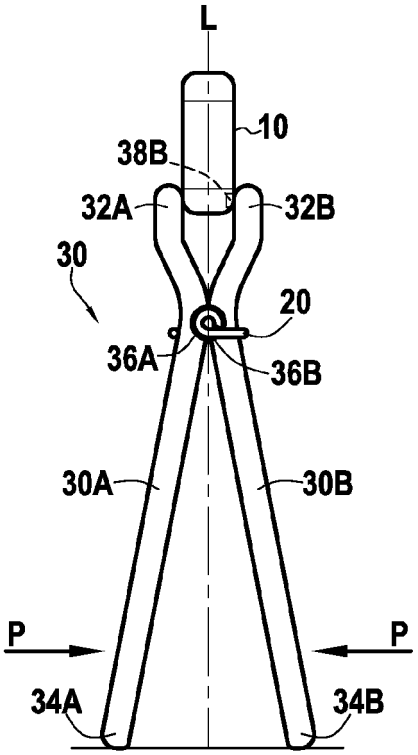

FIG.1B

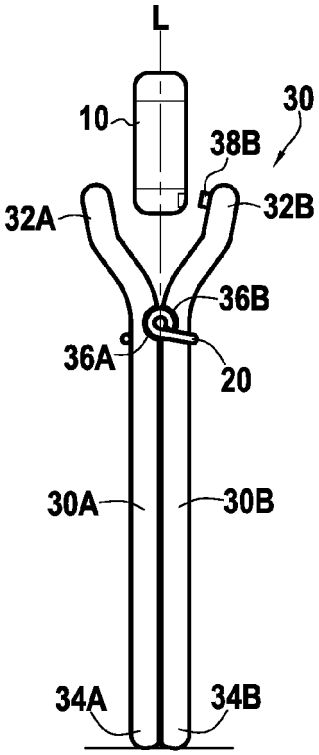

FIG.1C

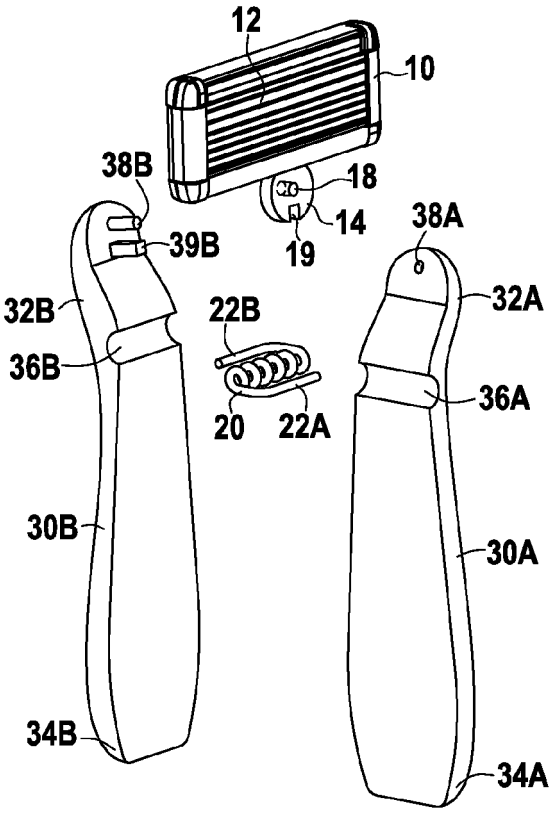

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FIG.2

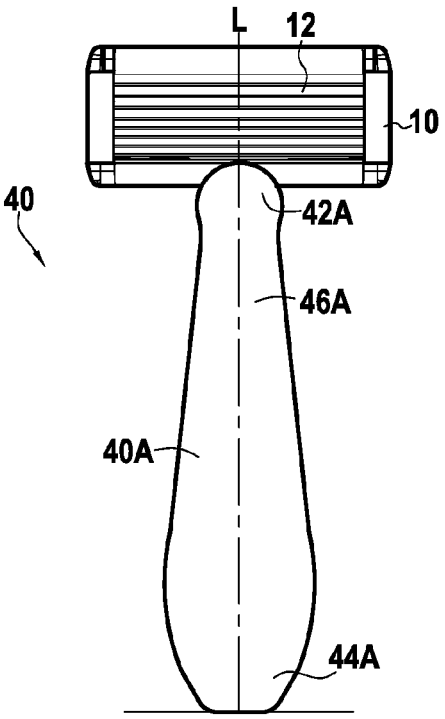

FIG.3A

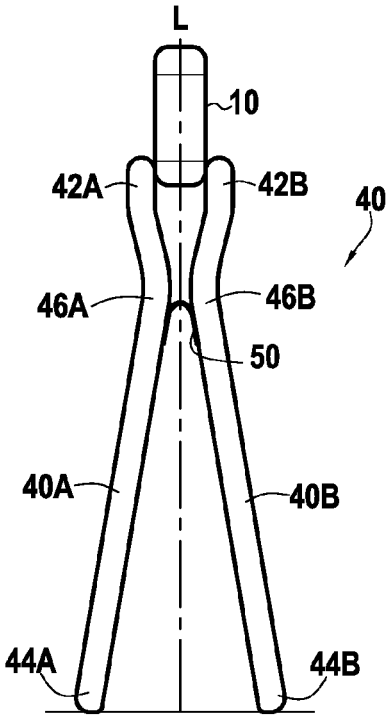

FIG.3B

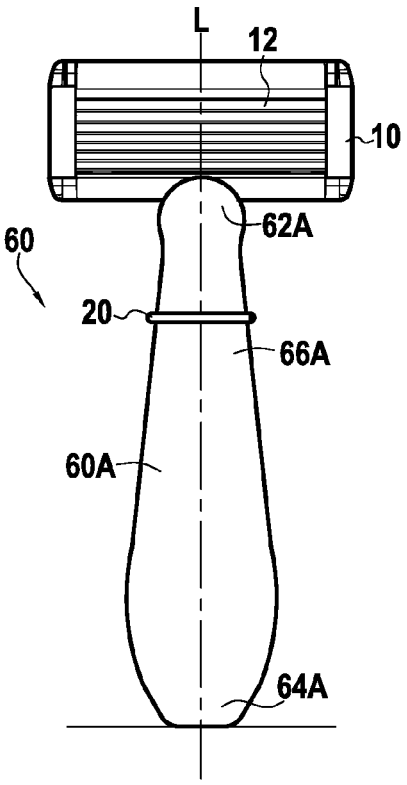

FIG.4A

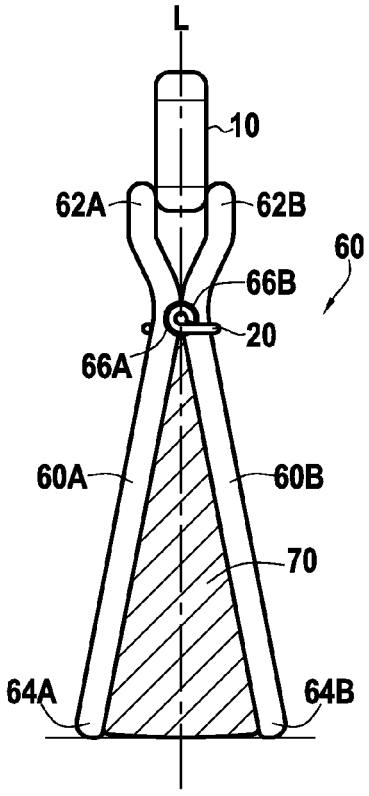

FIG.4B

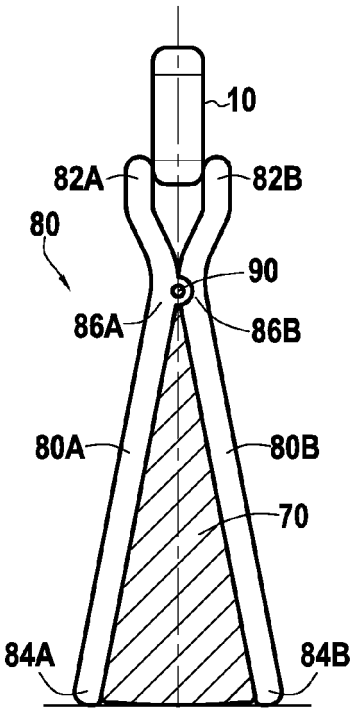

FIG.5A

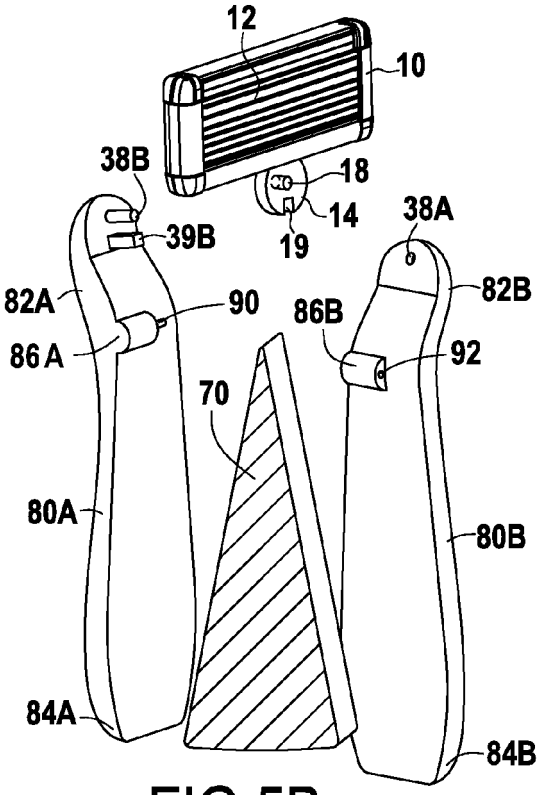

FIG.5B

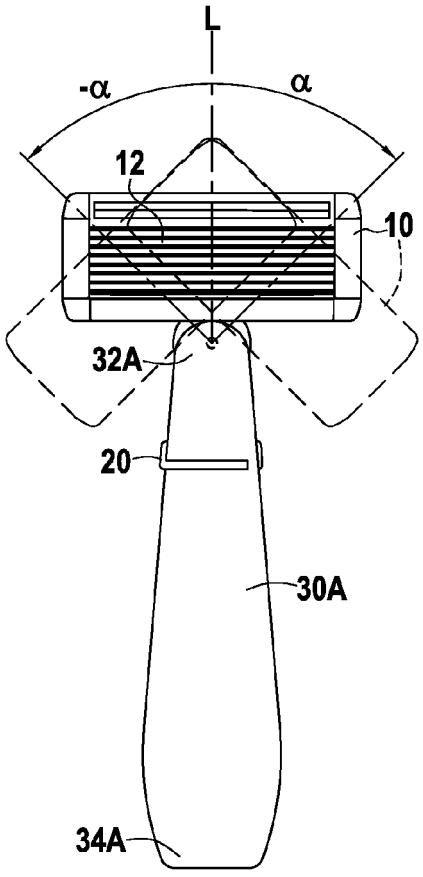

FIG.6

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 19 18 3379

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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