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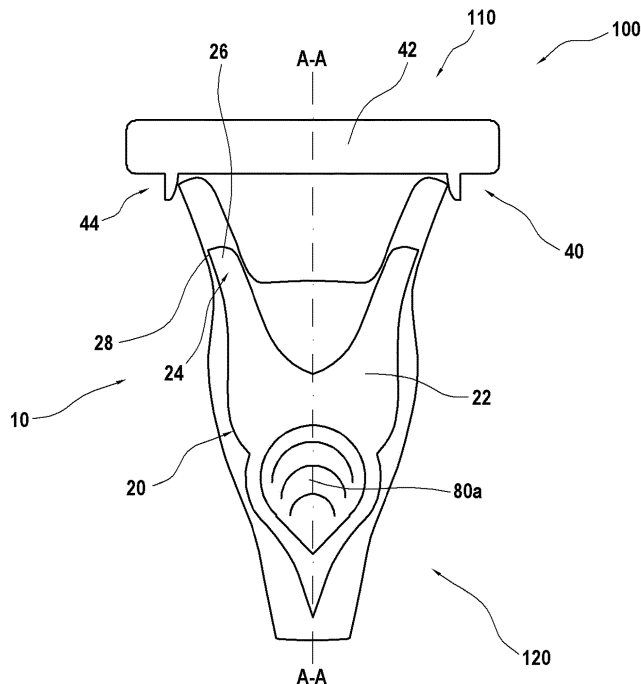
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(54) **SHAVING DEVICE**

(57) An adjustment mechanism (10) including a first adjustment member (20) including one or more first adjustment member engagement element (24) being configured to be moved between a first position and a second position by actuation of the first adjustment member and a second adjustment member (40) being capable of pivoting with respect to the first adjustment member, the second adjustment member including one or more second adjustment member engagement element (44) complementary to the first adjustment member engagement

element, wherein the first adjustment member engagement element is configured to engage the second adjustment member engagement element when the first adjustment member engagement element is moved from the first position toward the second position and the second adjustment member is no longer capable of pivoting with respect to the first adjustment member when the first adjustment member engagement element engages the second adjustment member engagement element.

[Fig. 2]



Description

FIELD

[0001] The present disclosure relates generally to the field of skincare, and in particular to shaving. More specifically, the present disclosure relates to an adjustment mechanism configured for use on a shaving device.

BACKGROUND

[0002] A typical handheld shaving device includes a handle and a replaceable shaving cartridge that is, and/or is configured to be, connected to the handle. The shaving cartridge of the typical shaving device is usually provided in either a fixed position or is freely-pivotable with respect to the handle of the shaving device.

[0003] In the case of the typical shaving device having the fixed-position shaving cartridge, the shaving cartridge is usually fixed at a position that is preset by the manufacturer of the shaving device, without a user being able to adjust the position of the shaving cartridge or have the shaving cartridge pivot along the contours of a surface being shaved, of which the latter may be desirable for a closer, more ergonomic shaving experience for the user. In the case of the typical shaving device having the freely-pivotable shaving cartridge, the shaving cartridge is usually only adapted for pivoting with respect to the handle, and not capable of being fixed with respect to the handle, of which the latter may be desirable for increased control of the shaving device by the user.

[0004] Additionally, in presently available shaving devices having any kind of adjustment mechanism, the adjustment mechanism typically employs a complex configuration, which includes an excessive amount of components, which results in increased modes of failure, increased costs of manufacture, and/or complicated functionality.

[0005] It is desirable to provide an adjustment mechanism for a shaving device configured to allow a shaving cartridge of the shaving device to be adjustably-fixed or freely-pivotable with respect to a handle of the shaving device, in a manner that simplifies a configuration of the adjustment mechanism and/or the shaving device and reduces a number of components of the adjustment mechanism and/or the shaving device.

SUMMARY

[0006] According to aspects of the disclosure, an adjustment mechanism configured for use on a shaving device is provided. The adjustment mechanism includes a first adjustment member being configured to be actuated by a user, the first adjustment member including one or more first adjustment member engagement element, the first adjustment member engagement element being configured to be moved between a first position and a second position by actuation of the first adjustment mem-

ber, and a second adjustment member being capable of pivoting with respect to the first adjustment member, the second adjustment member including one or more second adjustment member engagement element complementary to the first adjustment member engagement element, wherein the first adjustment member engagement element is configured to engage the second adjustment member engagement element when the first adjustment member engagement element is moved from the first position toward the second position and the second adjustment member is no longer capable of pivoting with respect to the first adjustment member when the first adjustment member engagement element engages the second adjustment member engagement element.

[0007] According to aspects of the disclosure, the first adjustment member may include a body and the first adjustment member engagement element extends from the body.

[0008] According to aspects of the disclosure, the body may extend to an end of the first adjustment member and the first adjustment member engagement element is included at a location at or adjacent to the end of the body.

[0009] According to aspects of the disclosure, the first adjustment member engagement element may include an abutment and the second adjustment member engagement element defines one or more recess configured to receive the abutment of first adjustment member engagement element.

[0010] According to aspects of the disclosure, the second adjustment member engagement element may define a plurality of recesses and each recess of the plurality of recesses is configured to receive the abutment of the first adjustment member engagement element.

[0011] According to aspects of the disclosure, the plurality of recesses of the second adjustment member engagement element may be oriented radially about the second adjustment member engagement element.

[0012] According to aspects of the disclosure, the abutment of the first adjustment member engagement element may include one of a ferromagnetic material or a permanent magnet and the second adjustment member engagement element may include one of a ferromagnetic material or a field magnet, opposite of the first adjustment member engagement element.

[0013] According to aspects of the disclosure, the adjustment mechanism according to any aspect presented herein may include a base configured to support the first adjustment member.

[0014] According to aspects of the disclosure, the first adjustment member may be configured to be moved with respect to the base when the first adjustment member is actuated by the user.

[0015] According to aspects of the disclosure, movement of the first adjustment member may move the first adjustment member engagement element between the first position and the second position.

[0016] According to aspects of the disclosure, the first adjustment member may include a first locking element

and the base may include a second locking element configured to cooperate with the first locking element to lock the first adjustment member engagement element in the second position.

[0017] According to aspects of the disclosure, the first adjustment member may include a mechanical-type push-button actuator configured to transmit a force applied by the user to the first adjustment member to move the first adjustment member engagement element between the first position and the second position when the actuator is actuated by the user.

[0018] According to aspects of the disclosure, the first adjustment member may include an electrical-type push-button actuator configured to transmit a signal to the first adjustment member engagement element to move the first adjustment member engagement element between the first position and the second position when the actuator is actuated by the user.

[0019] According to aspects of the disclosure, a shaving device is provided. The shaving device includes a handle configured to be held by a user, a shaving head configured to support one or more blades, and the adjustment mechanism according to any aspect presented herein.

[0020] According to aspects of the disclosure, the first adjustment member of the adjustment mechanism may be included on the handle of the shaving device and the second adjustment member of the adjustment mechanism may be included on the shaving head of the shaving device.

[0021] In the manner described and according to aspects illustrated herein, the adjustment mechanism and/or the shaving device are configured to allow a shaving cartridge of the shaving device to be adjustably-fixed or freely-pivotable with respect to a handle of the shaving device, in a manner that simplifies a configuration of the adjustment mechanism and/or the shaving device and reduces a number of components of the adjustment mechanism and/or the shaving device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] Aspects of an embodiment will be described in reference to the drawings, where like numerals reflect like elements:

Figure 1 is a side view of a shaving device including an adjustment mechanism according to aspects of the disclosure;

Figure 2 is a partial top view of the shaving device and the adjustment mechanism according to Figure 1, depicting a first adjustment member of the adjustment mechanism in a first position according to aspects of the disclosure;

Figure 3 a partial top view of the shaving device and the adjustment mechanism according to Figure 1, depicting the first adjustment member of the adjustment mechanism in a second position according to

aspects of the disclosure;

Figure 4A is a partial side cross-sectional view of a second adjustment member engagement element of a second adjustment member of the adjustment mechanism according to aspects of the disclosure, taken along line IV of Figure 3;

Figure 4B is a partial side cross-sectional view of the second adjustment member engagement element of the second adjustment member of the adjustment mechanism according to aspects of the disclosure, taken along line IV of Figure 3;

Figure 5 is a side cross-sectional view of the shaving device and the adjustment mechanism according to Figure 1, depicting a first locking element and a second locking element of the adjustment mechanism according to aspects of the disclosure;

Figure 6 is a partial top view of the shaving device and the adjustment mechanism according to Figure 1, depicting the first adjustment member of the adjustment mechanism in the first position, as well as the first locking element of the adjustment mechanism in an unlocked state according to aspects of the disclosure;

Figure 7 is a partial top view of the shaving device and the adjustment mechanism according to Figure 1, depicting the first adjustment member of the adjustment mechanism in the second position, as well as the first locking element of the adjustment mechanism in a locked state according to aspects of the disclosure;

Figure 8 is a partial top cross-sectional view of the second locking element of the adjustment mechanism according to aspects of the disclosure, taken along VIII of Figure 7;

Figure 9 is a partial top view of the shaving device and an alternative configuration of the adjustment mechanism according to aspects of the disclosure, depicting the first adjustment member engagement element of the first adjustment member of the adjustment mechanism in the first position; and

Figure 10 is a partial top view of the shaving device and the alternative configuration of the adjustment mechanism, depicting the first adjustment member engagement element of the first adjustment member of the adjustment mechanism in second first position.

DETAILED DESCRIPTION

[0023] An adjustment mechanism configured for use on a shaving device according to aspects of the disclosure will now be described with reference to Figures 1-10, wherein like numerals represent like parts, and will generally be referred to by the reference numeral 10. Although the adjustment mechanism 10 is described with reference to specific examples, it should be understood that modifications and changes may be made to these examples without going beyond the general scope as defined by the claims. In particular, individual character-

istics of the various embodiments shown and/or mentioned herein may be combined in additional embodiments. Consequently, the description and the drawings should be considered in a sense that is illustrative rather than restrictive. The Figures, which are not necessarily to scale, depict illustrative aspects and are not intended to limit the scope of the disclosure. The illustrative aspects depicted are intended only as exemplary.

[0024] The term "exemplary" is used in the sense of "example," rather than "ideal." 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(s) described. On the contrary, the intention of this disclosure is to cover all modifications, equivalents, and alternatives falling within the scope of the disclosure.

[0025] Various materials, methods of construction and methods of fastening will be discussed in the context of the disclosed embodiment(s). Those skilled in the art will recognize known substitutes for the materials, construction methods, and fastening methods, all of which are contemplated as compatible with the disclosed embodiment(s) and are intended to be encompassed by the appended claims.

[0026] 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.

[0027] Throughout the description, including the claims, the terms "comprising a," "including a," and "having a" should be understood as being synonymous with "comprising one or more," "including one or more," and "having one or more" 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," "approximately," and "generally" should be understood to mean falling within such accepted tolerances.

[0028] When an element or feature is referred to herein as being "on," "engaged to," "connected to," or "coupled to" another element or feature, it may be directly on, engaged, connected, or coupled to the other element or feature, or intervening elements or features may be present. In contrast, when an element or feature is referred to as being "directly on," "directly engaged to," "directly connected to," or "directly coupled to" another element or feature, there may be no intervening elements or features present. Other words used to describe the relationship between elements or features should be interpreted in a like fashion (e.g., "between" versus "directly between," "adjacent" versus "directly adjacent," etc.).

[0029] Spatially relative terms, such as "top," "bottom," "middle," "inner," "outer," "beneath," "below," "lower," "above," "upper," and the like, may be used herein for ease of description to describe one element or feature's relationship to another element(s) or feature(s) as illustrated in the drawings. Spatially relative terms may be intended to encompass different orientations of a device in use or operation in addition to the orientation depicted in the drawings. For example, if the device in the drawings is turned over, elements described as "below" or "beneath" other elements or features would then be oriented "above" the other elements or features. Thus, the example term "below" can encompass both an orientation of above and below. The device may be otherwise oriented (rotated 90 degrees or at other orientations) and the spatially relative descriptors used herein interpreted accordingly.

[0030] Although the terms "first," "second," etc. may be used herein to describe various elements, components, regions, layers, sections, and/or parameters, these elements, components, regions, layers, sections, and/or parameters should not be limited by these terms. These terms are only used to distinguish one element, component, region, layer, or section from another region, layer, or section. Thus, a first element, component, region, layer, or section discussed herein could be termed a second element, component, region, layer, or section without departing from the teachings of the present disclosure.

[0031] As shown in Figures 1-3, the adjustment mechanism 10 is configured to adjust one or more parts of a shaving device 100. In examples, the shaving device 100 includes a head (also referred to herein as a "shaving cartridge") 110 and a handle 120. In particular, the adjustment mechanism 10 is configured to adjust a fixed position of the head 110 of the shaving device 100 with respect to the handle 120 of the shaving device 100. Additionally or alternatively, the adjustment mechanism 10 is configured to transition the head 110 of the shaving device 100 between a fixed state and a pivoting state with respect to the handle 120 of the shaving device 100.

[0032] It is contemplated that the head 110 of the shaving device 100 is configured for shaving a body part (e.g. a face, arm, leg, and/or the like) of a user. Accordingly, the head 110 of the shaving device 100 may include one or more blades (not shown) manufactured from sheet metal and/or the like extending across the head 110 of the shaving device 100. Additionally, it is contemplated that the handle 120 of the shaving device 100 is configured to be held by a hand of the user. Accordingly, the handle 120 of the shaving device 100 may include an elongated, ergonomic shape corresponding to the hand of the user. Additionally, it is contemplated that the head 110 of the shaving device 100 may be connected, coupled, and/or configured to be coupled to the handle 120 of the shaving device 100. To this end, it is contemplated that the head 110 of the shaving device 100 and the handle 120 of the shaving device 100 may be connected

and/or coupled by any type of connection, construction, and/or coupling mechanism (not shown) that may be compatible with the adjustment mechanism 10 and/or the shaving device 100. Further, it is contemplated that aspects of the adjustment mechanism 10 may be included on and/or form part of the head 110 and/or the handle 120 of the shaving device 100 (discussed further below). Accordingly, the adjustment mechanism 10 may be considered to be part of the shaving device 100.

[0033] As shown in Figures 2-3, 6-7, and 9-10 the adjustment mechanism 10 is bisected by an axis A-A and includes a first adjustment member 20 and a second adjustment member 40. In examples, the first adjustment member 20 and the second adjustment member 40 are configured to engage each other (see Figures 3, 7, and 10) and to disengage each other (see Figures 2, 6, and 9). In examples, when the first adjustment member 20 and the second adjustment member 40 are disengaged, the head 110 of shaving device 100 is capable of pivoting with respect to the handle 120 of the shaving device 100 and/or being adjusted by the user. In examples, when the first adjustment member 20 and the second adjustment member 40 are engaged, the head 110 of the shaving device 100 is no longer capable of pivoting with respect to the handle 120 of the shaving device 100 and is fixed at a position with respect to the handle 120 of the shaving device 100 that is selected by the user. In this manner, the first adjustment member 20, the second adjustment member 40, and, thus, the adjustment mechanism 10, are configured to allow the head 110 of the shaving device 100 to be adjustably-fixed or freely-pivotable with respect to the handle 120 of the shaving device 100, in a manner that simplifies a configuration of the adjustment mechanism 10 and/or the shaving device 100 and reduces a number of components of the adjustment mechanism 10 and/or the shaving device 100.

[0034] As illustrated by Figures 2-3, 6-7, and 9-10, the first adjustment member 20 is configured to extend axially, or substantially axially, along at least a portion of the handle 120 of the shaving device 100. In particular, the first adjustment member 20 is configured to extend along an end of the handle 120 of the shaving device 100 that connects to and/or couples to the head 110 of the shaving device 100. In this manner, the first adjustment member 20 is positioned so as to be capable of engaging and disengaging the second adjustment member 40. Referring to Figures 2-3 and 6-7, in examples, the first adjustment member 20 may include a body 22 configured to be supported by the handle 120 of the shaving device 100 and one or more first adjustment member engagement element 24 configured to extend from the body 22 and engage the second adjustment member 40. In examples, the body 22 extends to an end 26 and the one or more first adjustment member engagement element 24 is configured to extend from a location at or adjacent to the end 26 of the body 22, so as to be capable of interacting with the second adjustment member 40. In examples, the first adjustment member 20 may include

a plurality of first adjustment member engagement elements 24 that are configured to function the same or substantially similar to each other; as such, each first adjustment member engagement element 24 of the plurality of first adjustment member engagement elements 24 will be described herein as "the first adjustment member engagement element 24," unless reference to the plurality of first adjustment member engagement elements 24 is otherwise necessary.

[0035] In examples, the first adjustment member engagement element 24 is configured to form an interference-fit engagement with the second adjustment member 40 so as to allow for ease of engagement and disengagement between the first adjustment member 20 and the second adjustment member 40; however, it is contemplated that other engagements between the first adjustment member 20 and the second adjustment member 40 may be compatible with the adjustment mechanism 10. To this end, the first adjustment member engagement element 24 may include and/or be included in the form of an abutment (also referred to herein as a "pin") 28 configured to engage and/or be received by a complimentary structure 44 included by the second adjustment member 40 (a recess 46 included by a second adjustment member engagement element 44 of the second adjustment member 40-discussed further below), such that the first adjustment member 20 is configured to engage and disengage the second adjustment member 40. The abutment 28 of the first adjustment member engagement element 24 is configured to extend in a direction that is perpendicular, or substantially perpendicular, to the axis A-A, so as to face and be capable of engaging the complimentary structure 44 of the second adjustment member 40.

[0036] As shown in Figures 5-8, the first adjustment member 20 is configured to be supported by a base 60 included by the adjustment mechanism 10. In examples, the base 60 may be included as part of the handle 120 of the shaving device 100. As such, it is contemplated that the first adjustment member 20 may be considered to be included as part of the handle 120 of the shaving device 100. As illustrated by Figures 2-3, 6-7, and 9-10 the first adjustment member 20 may be configured to be moved between a first position (see Figures 2, 6, and 9) and a second position (see Figures 3, 7, and 10). As such, it is contemplated that the first adjustment member engagement element 24 may be configured to be moved between a first position (see Figures 2, 6, and 9) and a second position (see Figures 3, 7, and 10). In particular, the first adjustment member 20 and, thus, the first adjustment member engagement element 24, may be configured to be moved axially between the first position and the second position. In the first position, the first adjustment member 20 and, thus, the first adjustment member engagement element 24, are further from the second adjustment member 40 than when the first adjustment member 20 and, thus, the first adjustment member engagement element 24, are in the second position. Addi-

tionally, in the second position, the first adjustment member 20 and, thus, the first adjustment member engagement element 24, are closer to the second adjustment member 40 than when the first adjustment member 20 and, thus, the first adjustment member engagement element 24 are in the first position. In this manner, when the first adjustment member 20 and, thus, the first adjustment member engagement element 24, are in the first position, the first adjustment member 20 and the second adjustment member 40 are disengaged. Additionally, in this manner, when the first adjustment member 20 and, thus, the first adjustment member engagement element 24, are in the second position, the first adjustment member 20 and the second adjustment member 40 are engaged.

[0037] Referring to Figures 5-8, the first adjustment member 20 may be configured to be moved along and/or with respect to the base 60 of the adjustment mechanism 10. To this end, the base 60 may define an axially-extending guide (also referred to herein as a "first locking element") 62 configured to receive at least a portion of the first adjustment member 20. In examples, the first adjustment member 20 may include a projection (also referred to herein as a "second locking element") 30, at least a portion of which extends perpendicular or substantially perpendicular to the axis A-A, which is configured to be received in and secured by the guide 62 defined by the base 60. The guide 62 of the base 60 may extend to a locking portion (also referred to herein as the "first locking element") 64 defined by the base 60, which is configured to receive the projection 30 of the first adjustment member 20, so as to, from an unlocked state, lock the projection 30 of the first adjustment member 20 into a locked state and, thus, the first adjustment member 20, into a fixed position. In examples, it is contemplated that the first adjustment member 20 may include the guide 62 and the locking portion 64 and the base 60 may include the projection 30. Further, it is contemplated that the first adjustment member 20 is in the second position when the projection 30 of the first adjustment member 20 is received in the locking portion 64 of the base 60 in the locked state (see Figure 7). As such, it is contemplated that the locking portion 64 of the base 60 is configured to lock and/or fix the first adjustment member 20 into the second position, so as to transition and/or lock the head 110 of the shaving device 100 into the fixed state from the pivoting state.

[0038] In examples, the locking portion 64 of the base 60 is positioned at a location along the base 60 that is closer to the second adjustment member 40 than a location of the guide 62 of the base 60 along the base 60. In this manner, movement of the first adjustment member 20 along the guide 62 of the base 60, from the first position toward the second position, moves the projection 30 of the first adjustment member 20 toward the locking portion 64 of the base 60, from the unlocked state toward the locked state. Further, when the projection 30 of the first adjustment member 20 reaches the locking portion 64 of

the base 60, the projection 30 of the first adjustment member 20 is received in the locking portion 64 of the base 60, so as to lock and/or fix the projection 30 of the first adjustment member 20 in the locked state and, thus, the first adjustment member 20, in the second position, thereby transitioning and/or locking the head 110 of the shaving device 100 in the fixed state from the pivoting state. In a similar regard, in this manner, movement of the first adjustment member 20 along the guide 62 of the base 60, from the second position toward the first position, moves the projection 30 of the first adjustment member 20 out of and away from the locking portion 64 of the base 60, from the locked state toward the unlocked state. Further, when the projection 30 of the first adjustment member 20 is moved out of and away from the locking portion 64 of the base 60, into the guide 62 of the base 60 to the unlocked state, the first adjustment member 20 is no longer locked and/or fixed in the second position, thereby transitioning and/or unlocking the head 110 of the shaving device from the fixed state to the pivoting state. In this manner, the first adjustment member 20 may be configured to move between the first position and the second position. Additionally, in this manner, the first adjustment member 20 may be configured to be locked and/or fixed in the second position and unlocked and/or unfix from the second position, so as to transition the head 110 of the shaving device 100 between the pivoting state and the fixed state.

[0039] It is contemplated that one or more of the projection 30 of the first adjustment member 20, the guide 62 of the base 60, and the locking portion 64 of the base 60 may be configured for an interference-fit relationship between the projection 30 of the first adjustment member 20 and the guide 62 of the base 60 and/or between the projection 30 of the first adjustment member 20 and the locking portion 64 of the base 60. To this end, one or more of the projection 30 of the first adjustment member 20, the guide 62 of the base 60, and the locking portion 64 of the base 60 may be elastically deformable, so as to allow the projection 30 of the first adjustment member 20 to be capable of being secured within the guide 62 of the base 60, while also being capable of being pushed and/or snapped into the locking portion 64 of the base 60, between the unlocked state and the locked state.

[0040] As shown in Figures 2-3, 6-7, and 9-10, the first adjustment member 20 includes an actuator 80a, 80b configured to be actuated by the user to engage and disengage the first adjustment member 20 and the second adjustment member 40. In examples, the actuator 80a, 80b may be a mechanical-type push-button actuator 80a (see Figures 2-3 and 6-7) configured to transmit a force applied by the user to the first adjustment member 20 to move the first adjustment member 20 and, thus, the first adjustment member engagement element 24, between the first position and the second position when the actuator 80a is actuated by the user. In this manner, the first adjustment member 20 may be configured to engage and disengage the second adjustment member 40.

[0041] Referring to Figures 9-10, in an exemplary configuration of the adjustment mechanism 10, the first adjustment member 20 may not be configured to move between the first position and the second position. To this end, the first adjustment member 20 may be included directly on the base 60 of the adjustment mechanism 10 and/or the handle 120 of the shaving device 100 in a fixed position. Further, the first adjustment member 20 may include an electrical-type push-button actuator 80b configured to communicate and/or transmit a signal to the first adjustment member engagement element 24 through a wired connection 82 to move the first adjustment member engagement element 24 between the first position and the second position when the actuator 80b is actuated by the user. Accordingly, in this manner, the first adjustment member 20 may be configured to engage and disengage the second adjustment member 40.

[0042] As shown in Figures 2-4B, at least a portion of the second adjustment member 40 is configured to extend axially, or substantially axially, along at least a portion of the head 110 of the shaving device 100. In particular, the second adjustment member 40 is configured to extend along an end of the head 110 of the shaving device 100 that connects and/or couples to the handle 120 of the shaving device 100. In this manner, the second adjustment member 40 is positioned so as to be capable of engaging and disengaging the first adjustment member 20. In examples, the second adjustment member 40 includes one or more second adjustment member engagement element 44, which is complimentary to the first adjustment member engagement element 24 of the first adjustment member 20. In particular, the second adjustment member 40 may include a plurality of second adjustment member engagement elements 44 that are configured to function the same or substantially similar to each other; as such, each second adjustment member engagement element 44 of the plurality of second adjustment member engagement elements 44 will be described herein as "the second adjustment member engagement element 44," unless reference to the plurality of second adjustment member engagement elements 44 is otherwise necessary.

[0043] In examples, the second adjustment member engagement element 44 is configured to form an interference-fit engagement with the first adjustment member 20 so as to allow for ease of engagement and disengagement between the first adjustment member 20 and the second adjustment member 40; however, it is contemplated that other engagements, between the first adjustment member 20 and the second adjustment member 40 may be compatible with the adjustment mechanism 10. To this end, the second adjustment member engagement element 44 may define one or more recess 46 configured to engage and/or receive the abutment 28 included by the first adjustment member engagement element 24, such that the second adjustment member 40 is configured to engage and disengage the first adjustment member 20. In examples, referring to Figures 4A-4B, the

recess 46 of the second adjustment member engagement element 44 may be in the form of a slot (see Figure 4A) and/or a hole (see Figure 4B). In examples, the second adjustment member engagement element 44 includes a plurality of recesses 46 configured to engage and/or receive the abutment 28 included by the first adjustment member engagement element 24. The plurality of recesses 46 of the second engagement member engagement element 44 are configured to face a direction that is perpendicular, or substantially perpendicular, to the axis A-A, so as to face and be capable of engaging the first adjustment member 20.

[0044] In examples, it is contemplated that the structures and/or relationships corresponding to the first adjustment member engagement element 24 may instead be included by the second adjustment member 40 and the structures and/or relationships corresponding to the second adjustment member engagement element 44 may instead be included by the first adjustment member 20, in a manner that is compatible with the adjustment mechanism 10. Additionally or alternatively, it is contemplated that the first adjustment member engagement element 24 may include one of a ferromagnetic material (not shown) or a permanent magnet (not shown) and the second adjustment member engagement element 44 may include the other of a ferromagnetic material or a field magnet, opposite of and/or complimentary to the first adjustment member engagement element 24, so as to enhance the engagement between the first adjustment member engagement element 24 and the second adjustment member engagement element 44.

[0045] In examples, the second adjustment member engagement element 44 is configured to extend from a support 42 included by the adjustment mechanism 10. In examples, the support 42 may be included as part of the head 110 of the shaving device 100. As such, it is contemplated that the second adjustment member 40 may be considered to be included as part of the head 110 of the shaving device 100. In examples, the head 110 of the shaving device 100 is configured to pivot with respect to the handle 120 of the shaving device 100. Additionally or alternatively, the head 110 of the shaving device 100 is configured to pivot on an axis and/or plane that is perpendicular, or substantially perpendicular, to the axis A-A. Further, the second adjustment member 40 and, thus, the second adjustment member engagement element 44, are configured to pivot with respect to the first adjustment member 20 and, thus, the first adjustment member engagement element 24. Additionally or alternatively, the second adjustment member 40 and, thus, the second adjustment member engagement element 44, are configured to pivot on the axis and/or plane that is perpendicular, or substantially perpendicular, to the axis A-A.

[0046] In particular, the second adjustment member 40 and, thus, the second adjustment member engagement element 44, are configured to pivot with respect to the first adjustment member 20 and, thus, the first ad-

justment member engagement element 24, when the first adjustment member 20 and, thus, the first adjustment member engagement element 24, are in the first position (see Figure (see Figures 2, 6, and 9). Further, second adjustment member 40 and, thus, the second adjustment member engagement element 44, are no longer capable of pivoting with respect to the first adjustment member 20 and, thus, the first adjustment member engagement element 24, when the first adjustment member 20, and, thus, the first adjustment member engagement element 24, are in the second position (see Figures 3, 7, and 10). As such, the head 110 of the shaving device 100 is freely-pivotable when the first adjustment member 20 and, thus, the first adjustment member engagement element 24, are in the first position and the head 110 of the shaving device 100 is in a fixed position when the first adjustment member 20 and, thus, the first adjustment member engagement element 24, are in the second position. In this manner, the first adjustment member 20, the second adjustment member 40, and, thus, the adjustment mechanism 10, are configured to allow the head 110 of the shaving device 100 to be transitioned between the fixed state and the pivoting state (i.e. adjustably-fixed or freely-pivotable) with respect to the handle 120 of the shaving device 100, in a manner that simplifies a configuration of the adjustment mechanism 10 and/or the shaving device 100 and reduces a number of components of the adjustment mechanism 10 and/or the shaving device 100.

[0047] One or more of the head 110 of the shaving device 100 and the second adjustment member 40 may be connected to and/or coupled to the handle 120 of the shaving device 100 by way of a hinged connection (not shown), so as to facilitate pivoting of the head 110 of the shaving device 100 with respect to the handle 120 of the shaving device 100 and pivoting of the second adjustment member 40 with respect to the first adjustment member 20. Pivoting of the head 110 of the shaving device 100 during shaving allows for the head 110 of the shaving device 100 to move fluidly along contours of a surface being shaved, which may be desirable for a closer, more ergonomic shaving experience for the user. Additionally, pivoting of the second adjustment member 40 with respect to the first adjustment member 20 allows the user to select and fix a radial position of the head 110 of the shaving device 100 with respect to the handle 120 of the shaving device 100, thereby allowing for increased customization and control of the shaving device 100. To this end, referring to Figures 4A-4B, the plurality of recesses 46 of the second adjustment member engagement element 44 are oriented radially about the second adjustment member engagement element 44, so as to allow a user to select and/or adjust a radial engagement between the abutment 28 of the first adjustment member engagement element 24 and a selected recess 46 of the plurality of recesses 46 of the second adjustment member engagement element 44, thereby selectively fixing a radial position of the head 110 of the shaving device 100.

[0048] In operation, to transition the head 110 of the

shaving device 100 from the pivoting state to the fixed state and/or to select a fixed radial position of the head 110 of the shaving device 100, the user pivots the head 110 of the shaving device 100 with respect to the handle 120 of the shaving device 100 and, thus, the second adjustment member 40 with respect to the first adjustment member 20, until the user reaches a desired radial position of the head 110 of the shaving device 100 with respect to the handle 120 of the shaving device 100. The user then applies a force on the actuator of the first adjustment member 20, in a direction toward the second adjustment member 40, to move the first adjustment member 20 and, thus, the first adjustment member engagement element 24, from the first position toward the second position. In the exemplary configuration of the first adjustment member 20, the user applies a force on the actuator 80a of the first adjustment member 20, thereby transmitting the signal to the first adjustment member engagement element 24, to move the first adjustment member engagement element 24 from the first position toward the second position. In the second position, the abutment 28 of the first adjustment member engagement element 24 is received in the recess 46 of the second adjustment member engagement element 44, thereby restricting pivoting of the second adjustment member 40 with respect to the first adjustment member 20 and transitioning the head 110 of the shaving device 100 into the fixed state with respect to the handle 120 of the shaving device 100. In the second position, the protrusion 30 of the first adjustment member 20 is in the locked state, received in the locking portion 64 of the base 60 of the adjustment mechanism 10, thereby locking the first adjustment member 20 in the second position and the head 110 of the shaving device in the fixed state.

[0049] To transition the head 110 of the shaving device 100 from the fixed state to the pivoting state and/or to select another fixed radial position of the head 110 of the shaving device 100, the user applies a force on the actuator of the first adjustment member 20, in a direction away from the second adjustment member 40, to move the first adjustment member 20 and, thus, the first adjustment member engagement element 24, from the second position toward the first position. In the exemplary configuration of the first adjustment member 20, the user applies a force on the actuator 80b of the first adjustment member 20, thereby transmitting a signal to the first adjustment member engagement element 24 to move the first adjustment member engagement element 24 from the second position toward the first position. In the first position, the protrusion 30 of the first adjustment member 20 is in the unlocked state, no longer received in the locking portion 64 of the base 60 of the adjustment mechanism 10, thereby no longer locking the first adjustment member 20 in the second position. Additionally, in the first position, the abutment 28 of the first adjustment member engagement element 24 is no longer received in the recess 46 of the second adjustment member engagement element 44, thereby no longer restricting piv-

oting of the second adjustment member 40 with respect to the first adjustment member 20 and locking the head 110 of the shaving device 100 in the fixed position with respect to the handle 120 of the shaving device 100. In this manner, the adjustment mechanism 10 is configured to allow the shaving head 110 of the shaving device 100 to be set in an adjustably-fixed position and/or to be freely-pivotable with respect to a handle 120 of the shaving device 100, in a manner that simplifies a configuration of the adjustment mechanism 10 and/or the shaving device 100 and reduces a number of components of the adjustment mechanism 10 and/or the shaving device 100.

[0050] 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.

[0051] 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.

[0052] Additionally, all of the disclosed features of an apparatus may be transposed, alone or in combination, to a method and vice versa.

Claims

1. An adjustment mechanism (10) configured for use on a shaving device (100), the adjustment mechanism comprising:

a first adjustment member (20) being configured to be actuated by a user, the first adjustment member including one or more first adjustment member engagement element (24), the first adjustment member engagement element (24) being configured to be moved between a first position and a second position by actuation of the first adjustment member; and

a second adjustment member (40) being capable of pivoting with respect to the first adjustment member (20), the second adjustment member including one or more second adjustment member engagement element (44) complimentary to the first adjustment member engagement element (24);

wherein the first adjustment member engagement element (24) is configured to engage the second adjustment member engagement element (44) when the first adjustment member engagement element is moved from the first position toward the second position and the second adjustment member (40) is no longer capable of pivoting with respect to the first adjustment member (20) when the first adjustment member engagement element engages the second adjustment member engagement element.

2. The adjustment mechanism (10) according to claim 1, wherein the first adjustment member (20) includes a body (22) and the first adjustment member engagement element (24) extends from the body (22).

3. The adjustment mechanism (10) according to claim 2, wherein the body (22) extends to an end (26) of the first adjustment member (20) and the first adjustment member engagement element (24) is included at a location at or adjacent to the end (26) of the body (22).

4. The adjustment mechanism (10) according to any of claims 1-3, wherein the first adjustment member engagement element (24) includes an abutment (28) and the second adjustment member engagement element (44) defines one or more recess (46) configured to receive the abutment (28) of first adjustment member engagement element (24).

5. The adjustment mechanism (10) according to claim 4, wherein the second adjustment member engagement element (44) defines a plurality of recesses (46) and each recess of the plurality of recesses is configured to receive the abutment (28) of the first adjustment member engagement element (24).

6. The adjustment mechanism (10) according to claim 5, wherein the plurality of recesses (46) of the second adjustment member engagement element (44) are oriented radially about the second adjustment member engagement element (44).

7. The adjustment mechanism (10) according to any of claims 4-6, wherein the abutment (28) of the first adjustment member engagement element (24) includes one of a ferromagnetic material or a permanent magnet and the second adjustment member engagement element (44) includes one of a ferromagnetic material or a field magnet, opposite of the first adjustment member engagement element (24).

8. The adjustment mechanism (10) according to any of claims 1-7, comprising a base (60) configured to support the first adjustment member (20).

9. The adjustment mechanism (10) according to claim 8, wherein the first adjustment member (20) is configured to be moved with respect to the base (60) when the first adjustment member is actuated by the user.

10. The adjustment mechanism (10) according to claim 9, wherein movement of the first adjustment member (20) moves the first adjustment member engagement element (24) between the first position and the second position.

11. The adjustment mechanism (10) according to any of claims 8-10, wherein the first adjustment member (20) includes a first locking element (30) and the base (60) includes a second locking element (64) configured to cooperate with the first locking element to lock the first adjustment member engagement element (24) in the second position. 5

12. The adjustment mechanism (10) according to any of claims 1-11, wherein the first adjustment member (20) includes a mechanical-type push-button actuator (80a) configured to transmit a force applied by the user to the first adjustment member to move the first adjustment member engagement element (24) between the first position and the second position when the actuator is actuated by the user. 10 15

13. The adjustment mechanism (10) according to any of claims 1-8, wherein the first adjustment member (20) includes an electrical-type push-button actuator (80b) configured to transmit a signal to the first adjustment member engagement element (24) to move the first adjustment member engagement element between the first position and the second position when the actuator is actuated by the user. 20 25

14. A shaving device (100) comprising:
 a handle (120) configured to be held by a user;
 a shaving head (110) configured to support one or more blades; and 30
 the adjustment mechanism (10) according to any of claims 1-13.

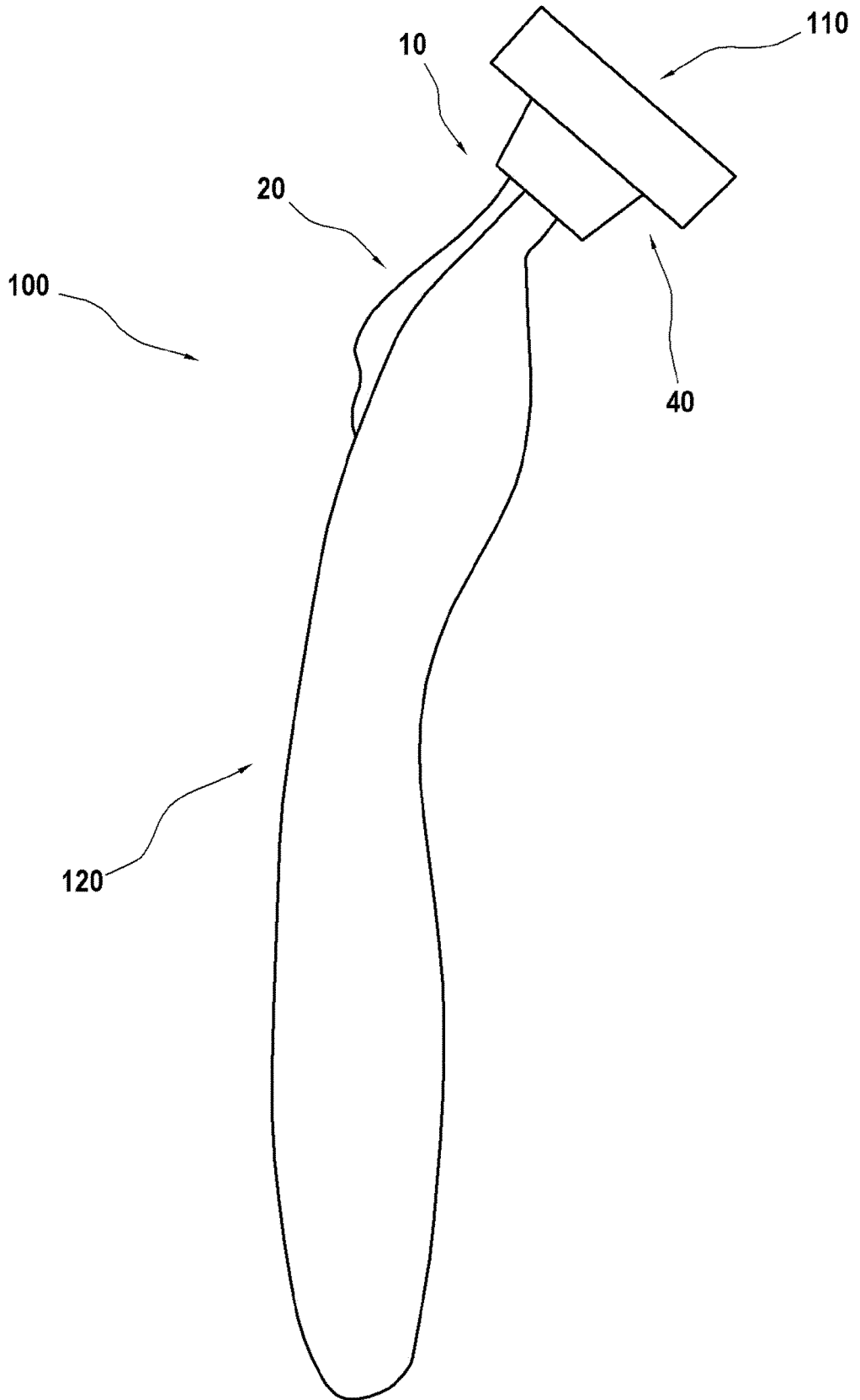
15. The shaving device (100) according to claim 14, wherein the first adjustment member (20) of the adjustment mechanism (10) is included on the handle (120) and the second adjustment member (40) of the adjustment mechanism is included on the shaving head (110). 35 40

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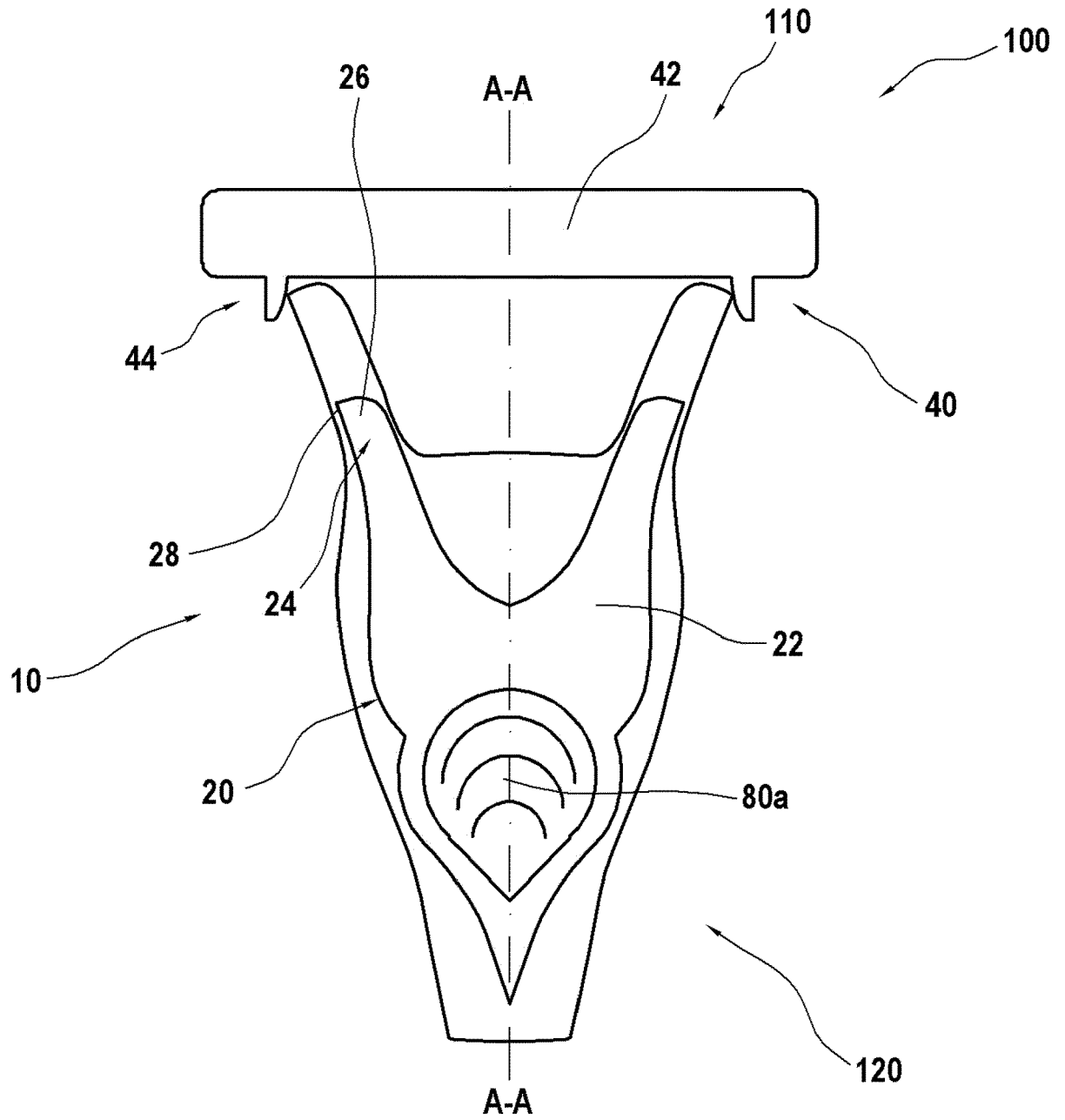
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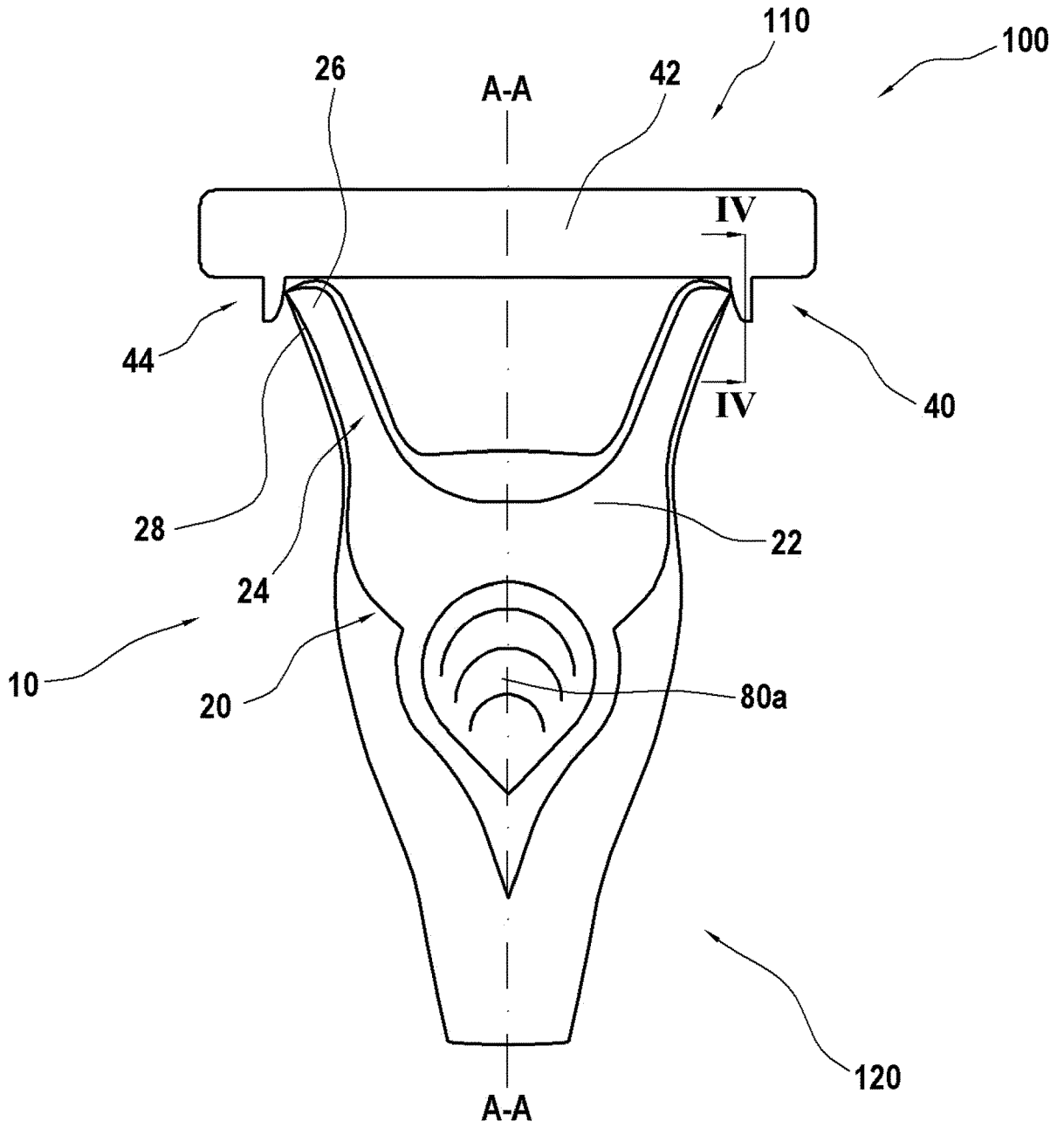
[Fig. 1]



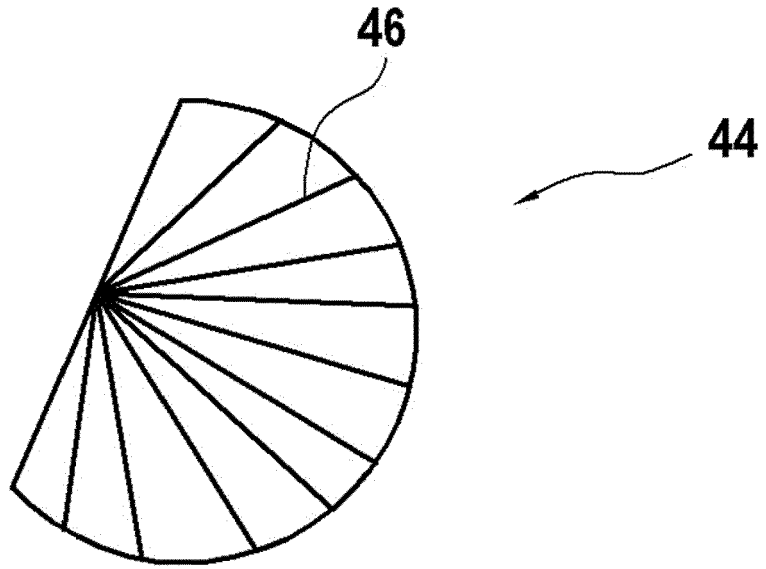
[Fig. 2]



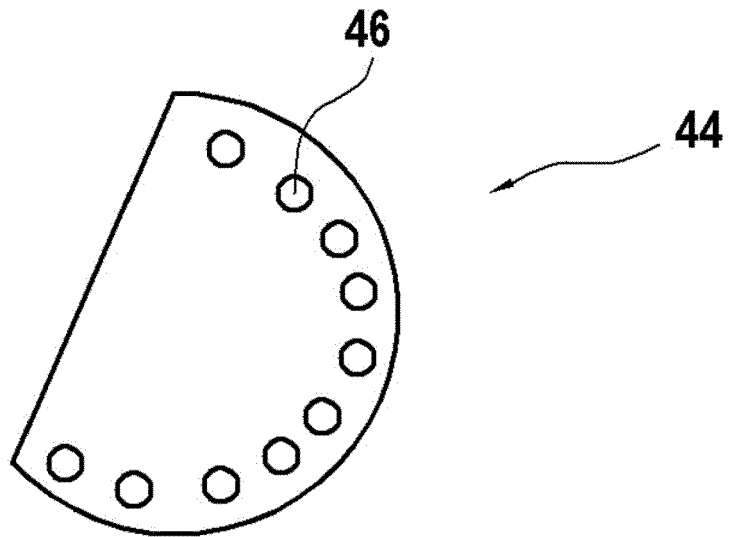
[Fig. 3]



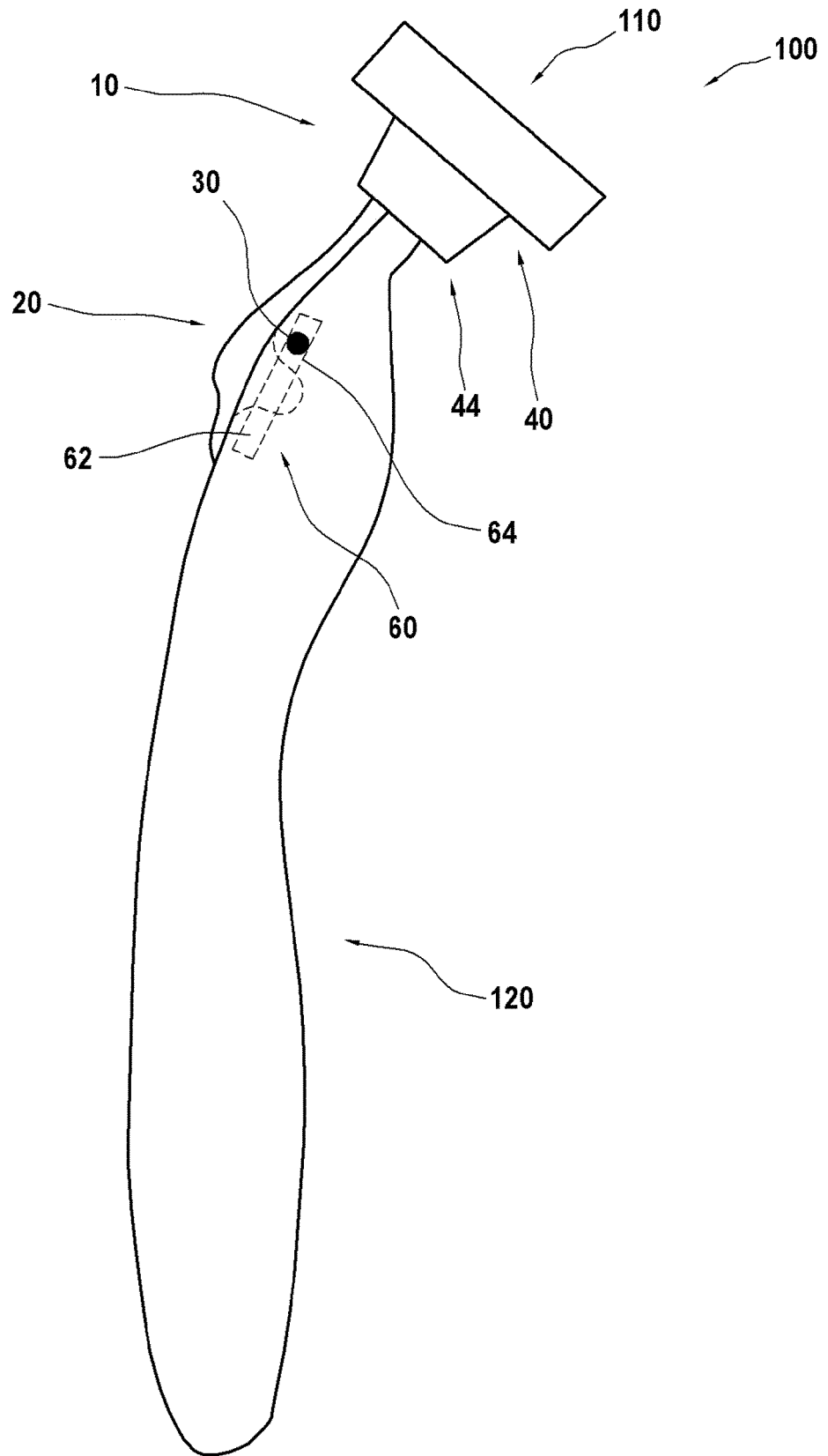
[Fig. 4A]



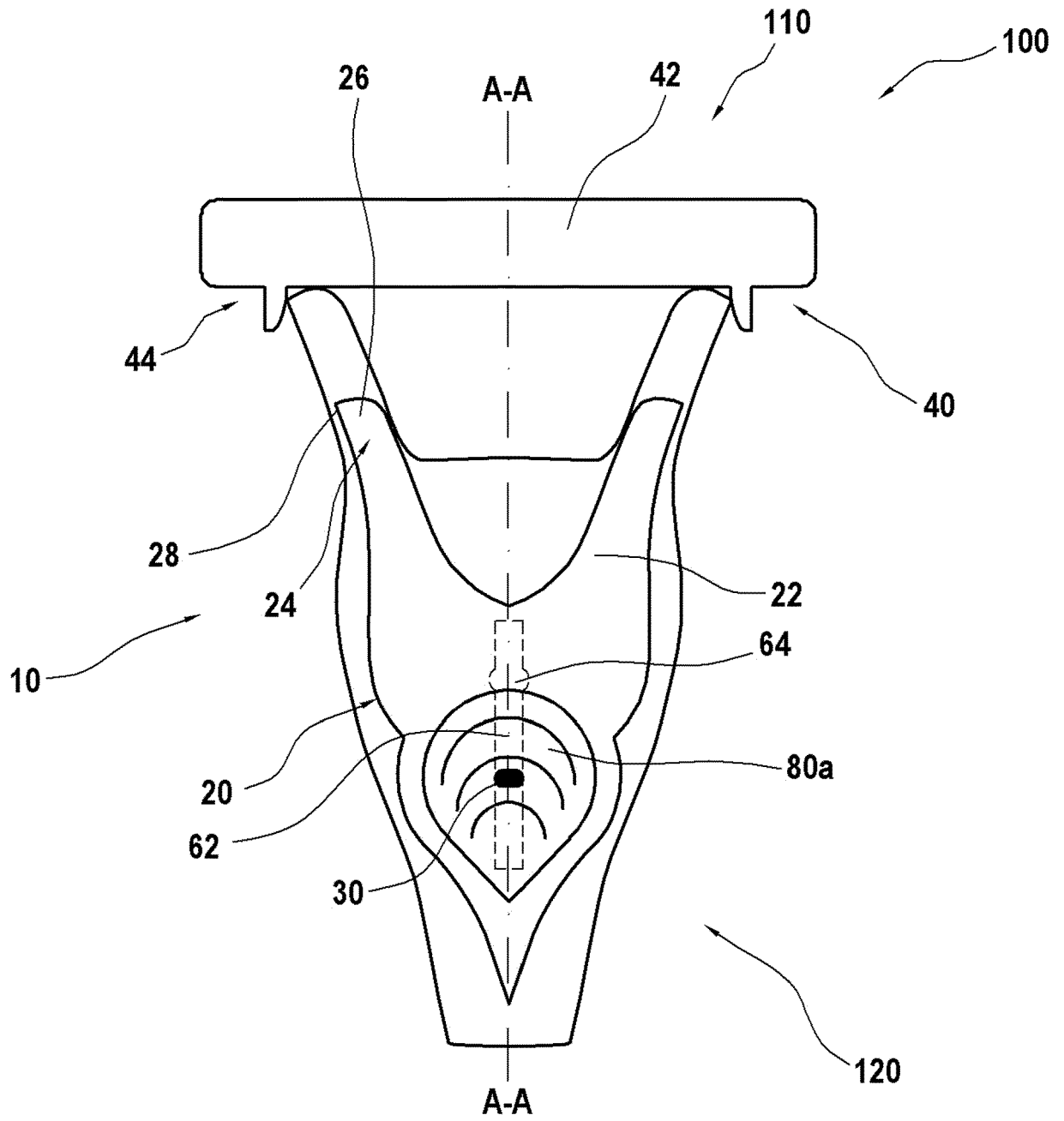
[Fig. 4B]



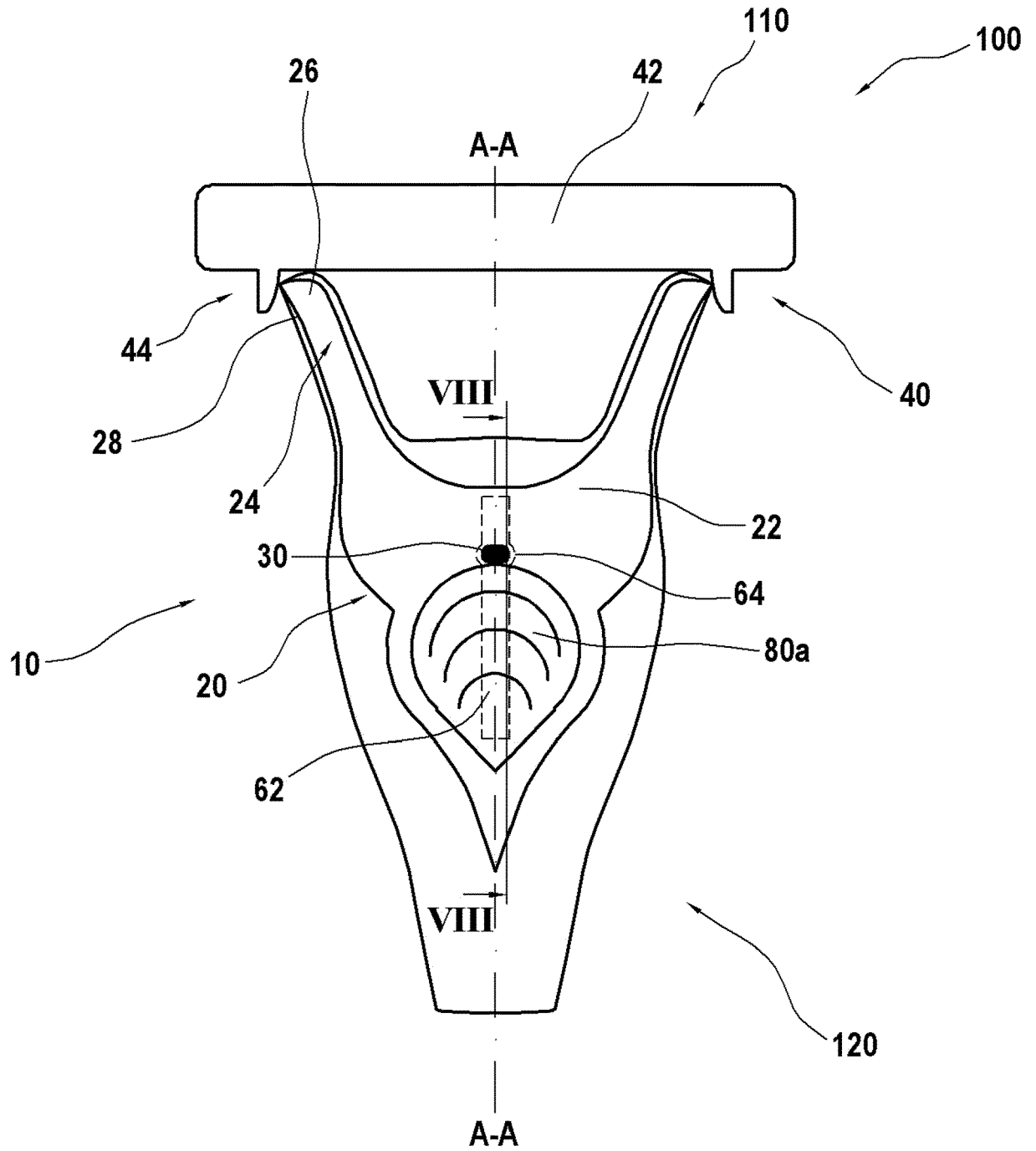
[Fig. 5]



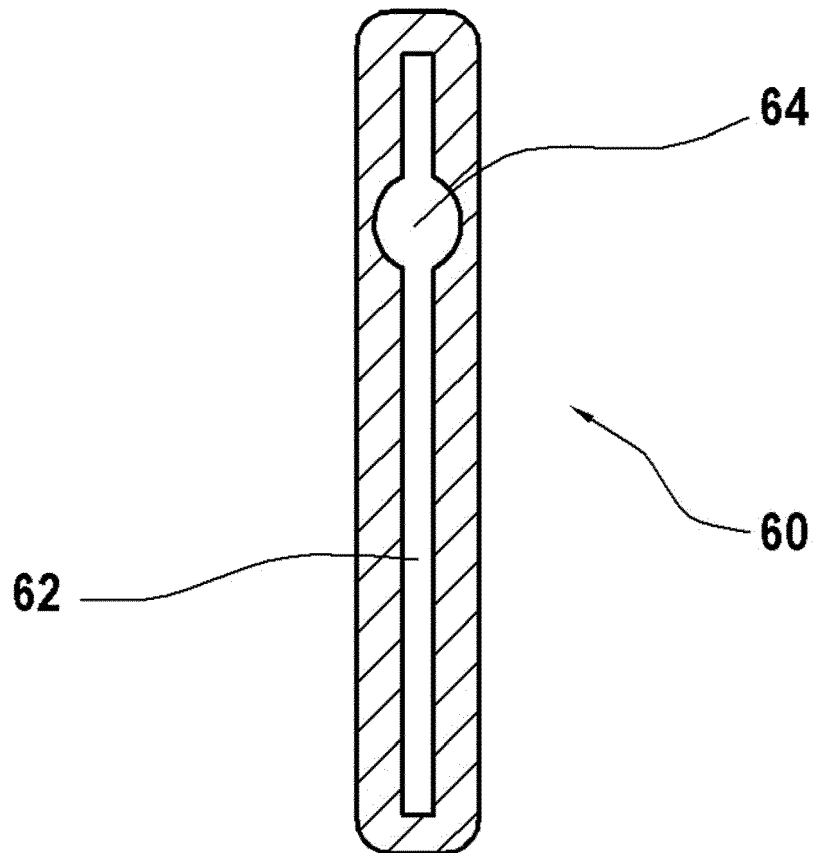
[Fig. 6]



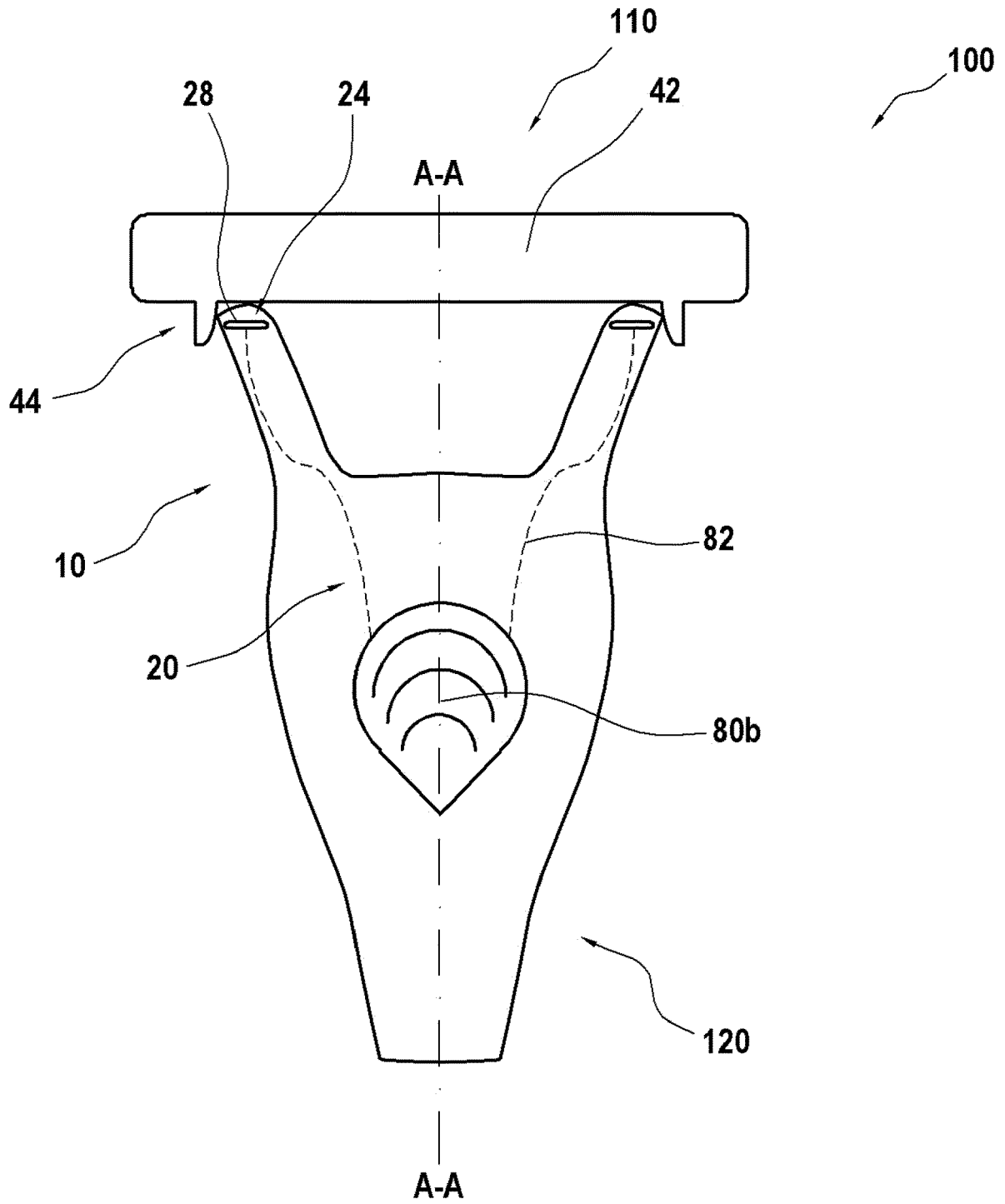
[Fig. 7]



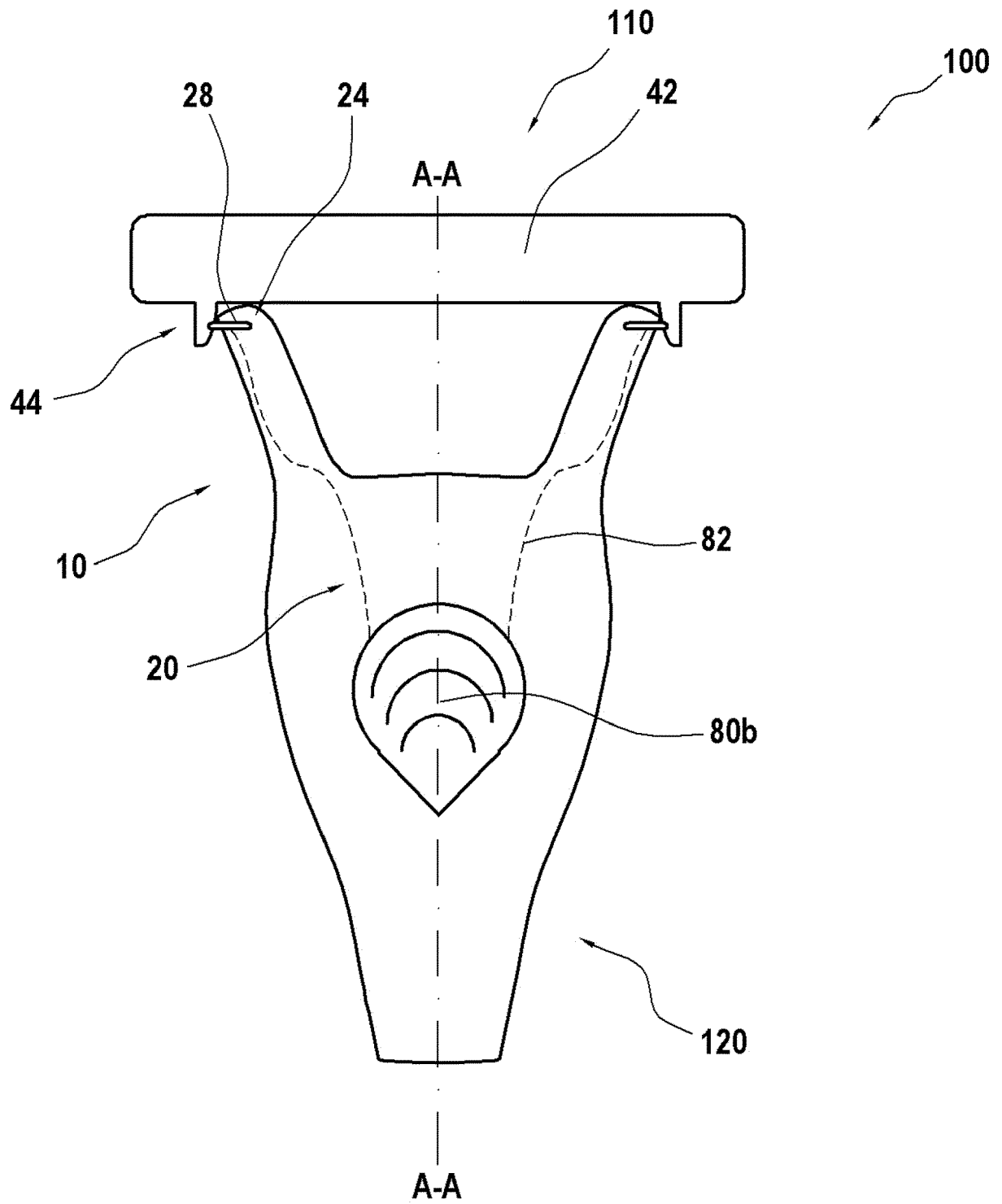
[Fig. 8]



[Fig. 9]



[Fig. 10]





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Application Number

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A	* column 5, lines 21-53; figures 2, 3, 7-9 *	7, 13	

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	* paragraphs [0032] - [0035]; figures 3-14 *		

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	* column 1, line 65 - column 3, line 12; figures 1-5 *		

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The present search report has been drawn up for all claims

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Place of search Munich	Date of completion of the search 24 April 2023	Examiner Rattenberger, B
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