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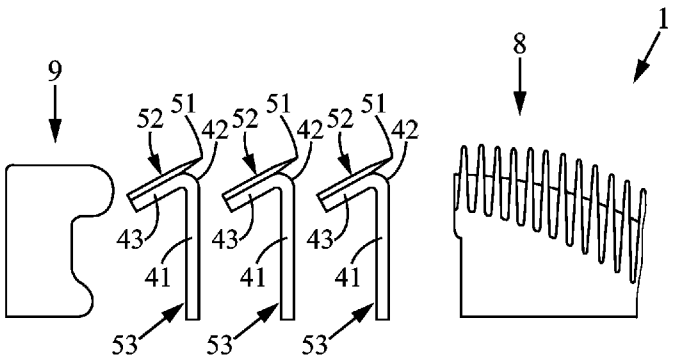


FIG. 4

(57) Abstract: A shaving cartridge (1) that comprises a housing (3) having a top side, and a bottom side, a front side and a rear side, at least one cutting member (5) having a cutting edge extending along a longitudinal axis X-X and exposing via said top side of the housing, and a holder (6) that comprises an elastic system configured to bias said at least one cutting member toward a rest position. Said holder is configured to maintain the at least one cutting member within the shaving cartridge while allowing at least an intermediate portion of the at least one cutting edge to move backward toward the rear side of the housing and downward toward the bottom side of the housing, with respect to said rest position, seen from the top side of the housing.

WO 2018/007130 A1

SHAVING CARTRIDGE

FIELD

The present disclosure is related to a shaving cartridge. More particularly, the disclosure relates to a repositioning of the centroidal axis of moment of inertia of an intermediate portion of a cutting edge of a cutting member.

BACKGROUND

Typical shaving cartridges includes a housing defining a blade portion where one or more razor blades are located, and at least one blade arranged within the blade portion of the housing. The cartridge is connected to a handle and the shaving cartridge together with the handle form a shaving razor.

Recently, it has been common for the blade to be supported on a blade support configured to form together a cutting member. The cutting members are designed to move inside the blade portion of the housing when shaving. An increase in the number of the blades used in the shaving cartridge leads to an improvement in the shaving efficiency, and the forces applied during shaving are better distributed.

Most of the current shaving cartridges are equipped with movable cutting members in order to follow the skin contour of a user in small scale. Further, the currently designed cutting members are only capable of following the skin within certain limits during the shave.

At the same time, increasing the number of cutting members also requires increasing the area occupied by cutting members. That is, the space for the flow of water and shaving debris through the cartridge (rinsability) decreases for a given shaving cartridge footprint. In turn, improving the rinsability of the razor cartridge for a given footprint with an increased number of cutting members would require thinner cutting members, either supported as discussed above, or integrally bent blades.

According to the current design of the cutting members, the loading of the blades, when shaving, is generally focused on the center of the blade. While thick cutting members may withstand loads during a shave, thinner cutting members, which are the trend when trying to improve both rinsability and shaving efficiency, are less likely to be able to withstand shaving loads. Hence, there is a need for supporting features. The rinsing is much better with the movable blades design, but by using thinner supports or integral bent blades, additional supporting features are required.

Conventional shaving devices include a shaving cartridge having a plurality of blades installed in the cartridge body. The shaving cartridge usually includes a pair of side fixation slots to fix the left and right ends of each blade. A supporter is used to connected the upper and lower frames of the cartridge body, and an inside fixation slot is formed on the supporter so as to fix a portion of each blade. The ends of the blades are fixed by the side fixation slots and a portion of the blade is fixed by the inside fixation slot and therefore a force for fixing the blades is enhanced. Consequently, the blades are fixed and supported reliably and their stability is improved.

However, due to the use of said supporting features, the rinsability of the shaving cartridge is reduced since some areas for rinsing are blocked, leading to debris accumulation. As a result, the overall shaving performance is decreased.

To enhance the rinsability and the shaving performance there is a need for thinner blades and thinner supports. This could be difficult in due to the minimum possible distance between the blades/supports with respect to deflection of each blade, as well as the manufacture of the blades/supports. In other words, during shaving, when a load is applied on the blade, there is a possibility that a first blade is deformed more than a blade behind the first blade. If two blades are arranged close to each other, the risk of contact between the highly deformed first blade and the second less deformed blade positioned there behind occurs. Also, deformation of the blade during shaving (for a shaving cartridge with specific dimensions) limits how thin the support and blade body can be.

Finally, the directions in which the blade moves during shaving, results in a more “aggressive” profile, since the blade moves backwards and upwards with respect to a rest position leading to an

increased exposure. An increased exposure, leads the blade to "attack" the skin of the user, thus creating nicks and cuts and a general discomfort in the overall shaving experience.

"Exposure" is defined as the height of the cutting edge with respect to an average original shaving plane. "Positive exposure" corresponds to a cutting edge above this original shaving plane. "Negative exposure" corresponds to a cutting edge below this original shaving plane. In case of "positive exposure", "increased exposure" occurs when the cutting edge moves away from this original shaving plane.

SUMMARY

Aspects of the disclosure include a shaving cartridge that may increase shaving performance and that may eliminate the problems arising from the movement of the cutting members of the existing cartridges.

More particularly, a shaving cartridge may include a housing having a top side and a bottom side opposing said top side, a front side and a rear side opposing said front side. At least one cutting member having a cutting edge may be disposed within the housing and may extend along a longitudinal axis X-X between two opposed lateral sides. The cutting edge may be exposed via the top side of the housing. A holder having an elastic system configured to bias said at least one cutting member toward a rest position may also be included. the said elastic system may include elastic fingers. The elastic fingers may be configured to support the at least one cutting member within the shaving cartridge while allowing at least an intermediate portion of the at least one cutting edge, provided between said two opposed lateral sides, to move backward toward the rear side and downward toward the bottom side, with respect to a rest position of the cutting member when viewed from the top side of the housing.

The present disclosure involves a shaving cartridge where the intermediate portion of the cutting edge moves backward and downward during shaving, which allows for a less aggressive blade. Repositioning of the cutting edge in a backward and downward manner could be achieved in various ways as detailed herein.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of aspects of the present disclosure will appear from the following detailed description, given by way of non-limiting examples, and with reference to the accompanying drawing.

- Figure 1 is an exploded cross-sectional view of a conventional shaving cartridge;
- Figure 2 is an exploded perspective view of the conventional shaving cartridge of Figure 1;
- Figure 3 is an exploded perspective view of the shaving cartridge according to an aspect of the present disclosure;
- Figure 4 is an exploded cross sectional view of the shaving cartridge according to Figure 3;
- Figure 5 is a cross sectional view of the shaving cartridge according to another aspect of the disclosure;
- Figure 6 is an enlarged vertical cross-sectional view of a cutting member of Figure 4;
- Figure 7 is an enlarged vertical cross section view of a cutting member according to another aspect of the disclosure;
- Figure 8 is a cross sectional view of the conventional cutting member of Figure 1;
- Figure 9 shows a desired position of moment of inertia centroidal axis of the cutting member of the present disclosure.

DETAILED DESCRIPTION

In the figures, the same references denote the identical or the similar elements.

Figures 1 and 2 detail a conventional a shaving cartridge 100 including a housing 200, a plurality of cutting members 110, a guard bar 150 arranged at a front side of the housing 210, and a cap 160 arranged at a rear side of the housing 220 opposing said front side 210. The plurality of the cutting members 110 include blades 115 which are supported on elongated supports 120, respectively. The blade 115 and the elongated support 120 together forms a blade and support assembly. Each cutting member 110 is held within the cartridge 100 using retaining means, such as clips or retainers. The cutting member 110 includes two lateral sides 110a and a central portion 110b, as illustrated.

The housing 200 includes slots 180, elastic fingers 170, and clips 190. Each cutting member 110 is slidingly guided in two opposite slots 180, provided on each respective lateral side of the cartridge 230. In particular, a portion of the elongated support 120, which is shown vertical in Figure 1, slides in the slots 180. The cutting members 110 are supported on lateral elastic fingers 170, which extend upwardly from the lateral sides 230, and urge the cutting member 110 upward. The clip 190 forms a top abutment for the cutting members 110, which defines a rest position of the cutting member 110, which is achieved when not shaving. Due to the conventional design of the blade and support assembly, the loading of the blade 115 appears along the whole blade, i.e. the blade 115 is loaded in a longitudinal direction, along a longitudinal axis XX, while shaving, and the blade 115 has been mostly deformed at the central portion 115a.

An aspect of the present disclosure, according to Figure 3, may include a shaving cartridge 1 including a housing 3 having a front side 31, a rear side 32 opposing the front side 31, a top side 33, and a bottom side 34 opposing said top side 33. The housing 3 may also include first and second lateral sides 35, 36 (also called a plurality of lateral sides), which may extend between the front and rear sides 31, 32, along a transverse axis Y-Y. The first lateral side 35 and the second lateral side 36 may be arranged, in a lateral direction, along a lateral

axis Z-Z, between the top side 33 and the bottom side 34. The housing 3 may extend in a longitudinal direction, along a longitudinal axis X-X. The top side 33 and the bottom side 34 may be parallel to each other. The front side 31 and the rear side 32 may extend in the lateral direction, along the lateral axis Z-Z, between the top side 33 and the bottom side 34.

The shaving cartridge 1 may include a shaving window (not shown) (also called a shaving surface) arranged on the top side of the housing 33. The shaving window may extend along the longitudinal axis X-X. The shaving window may have a conventional shape, i.e. a rectangular shape. However, the shaving window may also be formed in any other shape. The shaving window, which may be a recess or cavity, may be configured to receive at least one cutting member 5. As illustrated in Figure 3, the shaving cartridge 1 may include three cutting members 5. Each cutting member 5 may extend along the longitudinal axis X-X in the longitudinal direction. According to other aspects, the shaving cartridge 1 may include more or less than three cutting members. The disclosure is made with reference to a shaving cartridge 1 that includes three cutting members 5. However, as mentioned above, the total number of the cutting members may vary. The lateral axis Z-Z may be positioned so as to intersect and be perpendicular to said longitudinal axis X-X. The transverse axis Y-Y may be orthogonal to the longitudinal axis X-X and to the lateral axis Z-Z.

The at least one cutting member 5 may include a cutting edge 51 extending along the longitudinal axis X-X and may be exposed via the top side of the housing 33. The cutting edge 51 may include a central portion 51a and two lateral sides 51b. The central portion 51a of the cutting edge 51 may be intermediate between the two lateral sides 51b of the cutting edge 51. The at least one cutting member 5 may include a cutting portion 52 (also called “blade”) and a shaped blade support portion 53 (also called “support portion”) assembled to one another. The shaving cartridge 1 may include at least one cutting member 5 extending along the longitudinal axis X-X where the cutting edges 51 of the cutting members 5 may be configured to be parallel to each other. The cutting portion 52 may be made out of different materials, for example, metal or ceramics.

The cutting portion 52 may be supported by the shaped blade support portion 53. The shaped blade support portion 53 may be made out of various materials, such as metal

materials. Each cutting member 5 may be carried by two elastic fingers 6. The elastic fingers 6 may be molded as a single piece with the housing 3 and may extend upwardly from both lateral sides of the housing 35, 36. The cutting members 5 may be slidingly guided in slots 7 provided in the housing 3. For example, the cutting portion 52 may be a supported blade having a cutting edge 51 fixed on the support portion 53. As such, the blade support 53 may be carried by said elastic fingers 6.

The at least one cutting member 5 may include two lateral sides 51b and a central portion 51a that may be intermediate to the lateral sides 51b of the cutting member 51. The central portion 51a of the cutting member 51 may correspond to the central portion 51a of the cutting edge 51 and two lateral sides 51b of the cutting member 51 may correspond to two lateral sides 51b of the cutting edge 51, as illustrated in Figure 3.

However, according to some aspects, the cutting members 5 may be integrally bent blades, as described, for example, in patent application WO2013/050606.

The housing 3 may be formed out of any plastic material and any other materials may also be used. A combination of two or more different materials may be used as well. The housing 3 may be formed in rectangular shape or may also have different shapes, for example, an oval shape.

The shaving cartridge 1 may also include a connecting member which connects directly or via an adaptor to the handle.

Referring to Figure 3, the shaving cartridge 1 may also include a guard bar 8 and a cap 9. The guard bar 8 may be forward of the cutting edge 51. The guard bar 8 may be located in front of the cutting edges 51 of the cutting members 5. The cap 9 may be located rearward of the cutting edge 51. In other words, the cap 9 may be behind the cutting edge 51. The guard bar 8 and the cap 9 may include a lubricating element configured to come into contact with the skin of the user during shaving. In other words, the guard bar 8 or the cap 9 may include a shaving aid member extending along the longitudinal axis X-X, and being of the same in length or smaller in length than the cap 9 or the guard bar 8.

The shaving cartridge 1, as seen in Figure 3, may include a holder that may be configured to securely maintain the at least one cutting member 5 in the housing 3, without lowering the shaving surface (shaving window). The holder may include, for example, a clip 10. The clip 10 may have a conventional U shape and may include a clip body 11, a first leg 12, and a second leg 13. The clip body 11 may extend along thetransverse axis Y-Y, in the transverse direction, and between the first leg 12 and second leg 13. The clip 10 may be located to face the cutting edge 51 of the cutting member 5, thus retaining the cutting member 5 within the shaving cartridge 1. The first leg 12 and second leg 13 may assist in retention of the clip 10 on the housing 3. When the cutting member 5 is not subject to external forces (when there is no shaving performed), the cutting member 5 may be in a rest position. When viewed from the top side of the housing 33, while shaving, the clip 10 may allow the at least one cutting member 5 to move downward and backward with respect to the rest position.

Figure 8 shows conventional blade having an applied load (force F) on the blade while shaving, wherein the cutting member moves in two directions - upward and backward with respect to the rest position. That is, the direction in which the central portion 115a of the cutting edge 116 of the blade 115 in the conventional shaving cartridge 100 moves, leading to a more “aggressive” having an increased shaving angle σ. The upward and backward movement and/or increased shaving angle σ results in the blade 115 “attacking” the skin of the user, thus creating unwanted nicks, cuts and general discomfort in the overall shaving experience. The “shaving angle” is defined as the angle that the blade forms with the original shaving plane. As shown in Figure 8, the shaving angle σ is the angle formed between the shaving plane and a moment of inertia centroidal axis CA. The angle σ is between 90° and 180° for the conventional cutting members 110.

According some aspects, by applying the external force F on the cutting member 5 during shaving, the central portion 51a of the cutting edge 51 of the cutting member 5 may move to the desired location, i.e. move backward and downward with respect to the rest position. The direction in which the central portion 51a of the cutting edge 51 of the cutting member 5 moves while shaving may lead to a less “aggressive” position when compared to the conventional shaving cartridge 100. The central portion 51a of the cutting edge 51 of the

cutting member 5 may move backward and downward, resulting in lowering the exposure (negative exposure) of the cutting member below the shaving plane, as seen in Figure 9 in comparison with the conventional shaving cartridge 100 of Figure 8. The cutting member 5 may therefore be less aggressive to the skin of the user, which may result in better fluidity, fewer unwanted nicks and cuts and also an improved shaving performance. Figure 9 details that shaving angle λ formed between the shaving plane and the centroidal axis of moment of inertia CA'. Due to the shape of the cutting member 5, the moment of inertia centroidal axis CA' may be repositioned in comparison to that of the conventional cutting member 115 wherein the axis CA' has a different inclination. The moment of inertia centroidal axis CA' may form with the shaving plane the angle λ that may be between 0° and 90° and according to some aspects may be about 70°.

The desired effect of having a backward and downward movement of the cutting member 5 may be accomplished in the entire range of the angle λ (area, from 0° to 90°). At an angle λ of 0°, the cutting member 5 may only move only backwards; however, at an angle λ of 90° the cutting member 5 moves backwards and downward, a maximum as allowed by the clip 11.

According to some aspects, the above described movement of the central portion 51a of the cutting edge 51 of the cutting member 5 may be obtained through a rigid body motion of the cutting member 5 upon shaving. Hence, the cutting member 5 may not be deformed (much) during shaving. As such, not only the central portion 51a of the cutting edge 51 of the cutting member 5 may have the backwards and downwards movement, but the whole cutting edge 51 of the cutting member 5 may move backwards and downwards. This may be achieved, for example, if the entire cutting member 5 may move backwards and downwards. Movement of the cutting member 5 upon shaving may be defined by the interaction of the cutting member 5 with the housing 31, i.e. the location and shape of the lateral slots 7, and the load applied by the elastic fingers 6.

The backwards and downwards movement of the central portion 51a of the cutting edge 51 of the cutting member 5 may also be obtained by considering elastic deformation of the cutting member 5 upon shaving. The following will be explained also by looking at where the moment of inertia centroidal axis CA' of the cutting member 5 may be located. The moment of inertia centroidal axis CA' may be a location on the cutting member 5 where the lowest

bending resistance occurs, that may be where the bending may be easiest due to the applied force F. Figure 9 shows the desired position of the moment of inertia centroidal axis CA' in order to obtain the desired backwards and downwards movement, superimposed on the shape of the conventional cutting member 110. The resulting exposure may be the negative (or less positive) exposure of the cutting edges 51 when shaving, in relation to the shaving plane at rest when compared to exposure of the cutting edges 51 at rest.

Hence, according to some aspects, repositioning of the moment of inertia centroidal axis may be required. Repositioning of the moment of inertia centroidal axis CA may be achieved in various ways. Repositioning of the moment of inertia centroidal axis CA may lead to a desired backwards and downwards movement of the central portion 51a of the cutting edge 51 of the cutting member 5, eliminating the problems such as nicks and cuts, less fluidity etc. associated with the movement direction of conventional cutting members 110.

The at least one cutting member 5 may include the cutting portion 52 having the cutting edge 51 oriented toward the front side of the housing 31, and the shaped blade support portion 53 may be configured to cooperate with the elastic fingers 6 to guide the movement of the at least one cutting member 5. The shaped blade support portion 53 may be between 0.07 and 0.18 mm thick. According to some aspect, the shaped blade support portion 53 may be between 0.10 mm and 0.15 mm thick and according to other aspects may be about 0.12 mm thick. The shaped blade support portion 53 design may make using a central supporting member redundant. The central supporting member, which may be present in or toward the middle of the shaving cartridge 1, may lead to clogging when rinsing the shaving cartridge 1. More particularly, the central supporting member may connect the front side 31 and the rear side 32 of the housing 3.

The cutting portion 52 may be attached to the shaped blade support portion 53 by welding techniques or any other techniques such as gluing or adhesives may be used.

According to some aspects, as illustrated in Figures 4 and 6, the shaped blade support portion 53may include a base portion 41, a bent portion 42 and a platform portion 43. The cutting portion 52 may be placed on the platform portion 43 that may extend toward the

bent portion 42. The bent portion 42 may be intermediate to the platform portion 43 and may extend frontward of the platform portion 43 and the base portion 41, and may extend between the platform portion 43 and the base portion 41. The base portion 41 may extend downward from the bent portion 42. The platform portion 43 may extend at an angle α that may be between 45° and 90° relative to the base portion. According to some aspects, the platform 43 may extend at an angle α of between 50° and 80° and according to further aspects, may be about 70°. The shape of the shaped blade support portion 53 may resemble a reverse L. By "reverse" L it is meant that along this orientation, the "L" is rotated by 180°. Compared to conventional cutting members 110, the base portion of the support extends frontward. The shaving cartridge 1 may, for example, include slots 7 and elastic fingers 6, which are adapted to the shape of the cutting member 5.

Accordingly, the lateral sides 51b of the cutting member 5 may be guided in lateral slots 7 of the shaving cartridge 1. The cutting member 5 may also be elastically biased, by the elastic fingers 6, close to the lateral sides 51b. As such, upon shaving, the lateral sides 51b of the cutting member 5 may not be deformed. The central portion 51a of the cutting member 5, intermediate between the lateral sides 51b, may be deformed most. In view of the shape of the cutting member 5, the cutting member may have a moment of inertia centroidal axis CA similar to a desired moment of inertia centroidal axis CA, as shown in Figure 9. The moment of inertia centroidal axis CA as shown in Figure 9 may allow for the deflection of the cutting member 5 upon shaving to be such that the central portion 51a of the cutting edge 51 of the cutting member 5 may be along the desired backwards and downwards movement.

While maximum deflection of the cutting member 5 may be detailed above as being obtained in the central portion 51a of the cutting member 5, according to further aspects, the cutting member 5 may be held elsewise in the shaving cartridge 1, so that the maximum deflection may not be obtained in the central portion 51a of the cutting member 5, but may be obtained elsewhere. For example, the cutting member may also be supported by the housing 3 using the central portion 51a. As such, the maximum deflection may be obtained in an intermediate location between the central portion 51a and each lateral side 51b. Other aspects may also be possible.

According to other aspects, the shaped blade support portion 53 may include an inward surface IS and an outward surface OS. As shown in Figure 7, the outward surface OS of the shaped blade support portion 53 may be a surface of the shaped blade support portion 53, extending along the lateral axis Z-Z, facing toward the cap 9. In other words, the outward surface OS of the shaped blade support portion 53 may be oriented toward the rear side 32 of the housing 3. The inward surface IS may be opposite the outward surface OS. More particularly, the inward surface IS may be a surface of the shaped blade support portion 53, extending along the lateral axis Z-Z, facing toward the guard bar 8. That is, the inward surface IS may face toward the front side 31 of the housing 3.

As shown in Figures 5 and 7, and according to some aspects, the shaped support portion 53 may further include a platform portion 71, a first bent portion 72, an intermediate portion 74, a second bent portion 73, and a base portion 75. Hence, the shape of the shaped support portion 53 may resemble a question mark or "S" shape. The platform portion 71 may extend towards the first bent portion 72 and may be configured to support the cutting portion 52. The first bent portion 72 may be intermediate to the platform portion 71 and the intermediate portion 74, and may extend between the platform portion 71 and the intermediate portion 74. The first bent portion 72 may be formed with a convex on the outward surface OS of the cutting member 5, i.e. the first bent portion 72 may be formed with a concave shape on the inward surface IS. The second bent portion 73 may be a concave on the outward surface OS of the cutting member 5. In other words, when viewed from the rear side 32 of the housing 3, the first bent portion 72 may assume the convex shape. The second bent portion 73 when viewed from the front side 31 of the housing 3, where the guard bar 8 may be located, the second bent portion 73 may assume the convex shape. The intermediate portion 74 may extend between the first bent portion 72 and the second bent portions 73. Referring to Figure 7, a first angle δ may be formed between the platform portion 71 and the intermediate portion 74 and may be between 45° and 80°. According to some aspects, the first angle δ may be between 50° and 70° and according to other aspects, the first angle δ may be about 52°. A second angle β may be formed between the intermediate portion 74 and the base portion 75 and may be between 100° and 160°. According to some aspects, the second angle β may be between 120° and 140°, and

according to some aspects, may be about 130°. The base portion 75 may extend downward form the second bent portion 73.

Compared to conventional cutting members 110, the base portion 41 of the shaped support portion 53 may extend frontward. The shaving cartridge 1 may, for example, include slots 7 and elastic fingers 6 which may be adapted to the shape of the cutting member 5.

Hence, the lateral sides 51b of the cutting member 5 may be guided in the lateral slots 7 of the shaving cartridge 1. The cutting member 5 may also be elastically biased, by the elastic fingers 6, close to the lateral sides 51b. Upon shaving, the lateral sides 51b of the cutting member 5 may not be deformed much due to these supporting features. The central portion 51a of the cutting member 5, intermediate between the lateral sides 51b, may be deformed most. In view of the shape of the cutting member 5, the cutting member 5 may have a desired moment of inertia centroidal axis CA similar to that as shown in Figure 9. The desired moment of inertia centroidal axis CA may allow for the deflection of the cutting member 5 upon shaving to be such that the central portion 51a of the cutting edge 51 of the cutting member 5 may be along the desired backwards and downwards movement.

While maximum deflection of the cutting member 5 may be obtained in the central portion 51a of the cutting member 5 according to further aspects, the cutting member 5 may also be held elsewise in the shaving cartridge 1, so that the maximum deflection may not be obtained in the central portion 51a of the cutting member 5, but may be obtained elsewhere. For example , the cutting member 5 may also be supported by the housing 3 in the central portion 51a. As such, the maximum deflection may be obtained in an intermediate location between the central portion 51a and each lateral side 51b. Other aspects may also appear possible.

According to one aspect, the desired movement of the central portion 51a of the cutting edge 51 of the cutting member 5 may be obtained through rigid body motion of the cutting member 5 upon shaving. According to other aspects, the desired movement of the central portion 51a of the cutting edge 51 of the cutting member 5 may be obtained through

a new shape of the cutting member 5, for example “L”, “S” or question mark-shaped, designed to enable the desired deformation of the cutting member 5 during shaving. Aspects for obtaining a desired movement of the central portion 51a of the cutting edge 51 of the cutting member 5 may be combined, and the desired movement of the central portion 51a of the cutting edge 51 of the cutting member 5 may also be achieved by a combination of rigid body motion and deflection.

CLAIMS

1. A shaving cartridge (1) comprising:

a housing (3) having a top side (33) and a bottom side (34) opposing said top side (33), a front side (31) and a rear side (32) opposing said front side (31);

at least one cutting member (5) having a cutting edge (51) extending along a longitudinal axis X-X between two opposed lateral sides (35, 36), expose via said top side of the housing (33),

a holder (6, 7, 10) that comprises an elastic system configured to bias said at least one cutting member (5) toward a rest position;

said holder (6, 7, 10) being configured to maintain said at least one cutting member (5) within the shaving cartridge (1) while allowing at least an intermediate portion (51a) of the at least one cutting edge, provided between said two opposed lateral sides, to move backward toward the rear side of the housing (32) and downward toward the bottom side of the housing (34), with respect to said rest position, seen from the top side of the housing (33).

2. A shaving cartridge (1) according to claim 1, wherein the at least one cutting member (5) has a moment of inertia centroidal axis (CA) such that a deflection of the at least one cutting member (5) upon shaving causes said backward and rearward movement of the cutting edge (51).

3. A shaving cartridge (1) according to claim 1 or 2, wherein said intermediate portion (51a) is a central portion of the cutting edge.

4. A shaving cartridge (1) according to any of claims 1 to 3, wherein the holder allows the whole cutting edge (51) to move backward toward the rear side of the housing (32) and downward toward the bottom side of the housing (34), with respect to said rest position.

5. A shaving cartridge (1) according to any of claims 1 to 4, wherein the at least one cutting member (5) comprises a cutting portion (52) having the cutting edge (51) oriented toward the front side of the housing (31) and a shaped blade support portion (53) configured

to cooperate with the housing support to guide a movement of the at least one cutting member (5) upon shaving.

6. A shaving cartridge (1) according to claim 5, wherein the shaped blade support portion (53) of at least one cutting member (5) comprises a platform portion (43) configured to carry the cutting portion (52), a bent portion (42) extending frontward of the platform portion (43), and a base portion (41) extending downward from the bent portion (42) and an angle (α) between the base portion (41) and the platform portion (43) is between 45° and 90°.

7. A shaving cartridge (1) according to claim 6, wherein the shaped blade support portion (53) of at least one cutting member (5) comprises an inward surface (IS) and an outward surface (OS) opposing the inward surface (IS), a platform portion (71), a first bent portion (72), a second bent portion (73), an intermediate portion (74) extending between the first and second bent portions (72,73), and a base portion (75) extending downward from the second bent portion (73); wherein

the first bent portion (72) is convex on the outward surface (OS) and the second bent portion (73) is concave on the outward surface (OS) of the shaped blade support portion (53).

8. A shaving cartridge (1) according to claim 7 further including a first angle (δ) that is formed between the platform portion (71) and the intermediate portion (74) is between 45° and 80°.

9. A shaving cartridge (1) according to claims 7 or 8 further including a second angle (β) formed between the intermediate portion (74) and the base portion (75) is between 100° and 160°.

10. A shaving cartridge according to any one of claims 5 to 9, wherein the shaped blade support portion of at least one cutting member is between 0.07 mm to 0.18 mm thick.

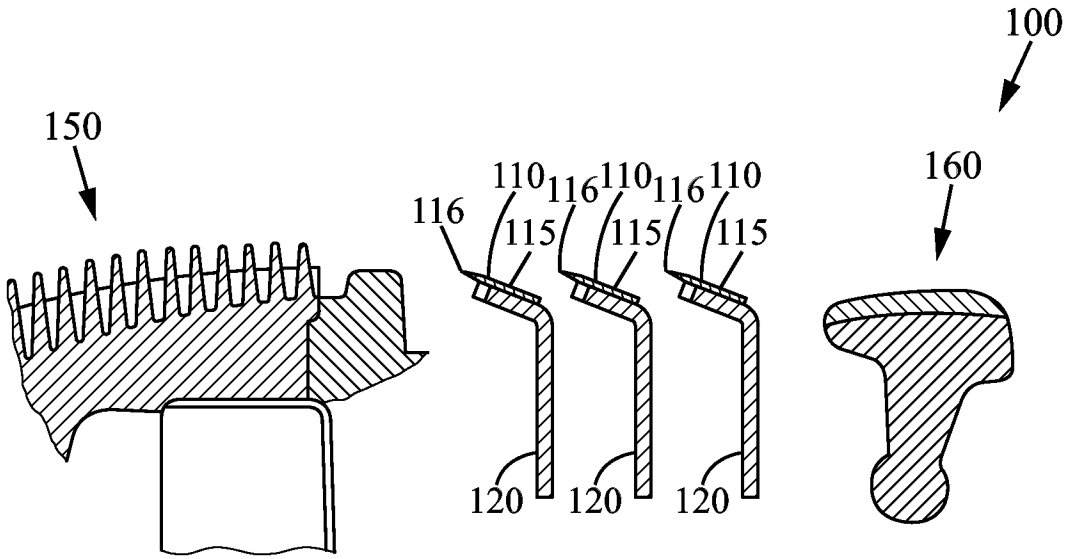
11. A shaving cartridge (1) according to any one of claims 1 to 10, wherein said holder comprises a clip (10) extending along a transversal axis Y-Y and extending between the front side of the housing (31) and the rear side of the housing (32), and defining said rest position.

12. A shaving cartridge (1) according to claim 11, wherein said elastic system biases said at least one cutting member (5) toward the top side of the housing (33).

13. A shaving cartridge (3) according to any one of claims 1 to 13 comprises at least two cutting members (5) extending along the longitudinal axis X-X, wherein

each one of the at least two cutting members (5) having a cutting edge (51), and

the cutting edges (51) are configured to be parallel to each other.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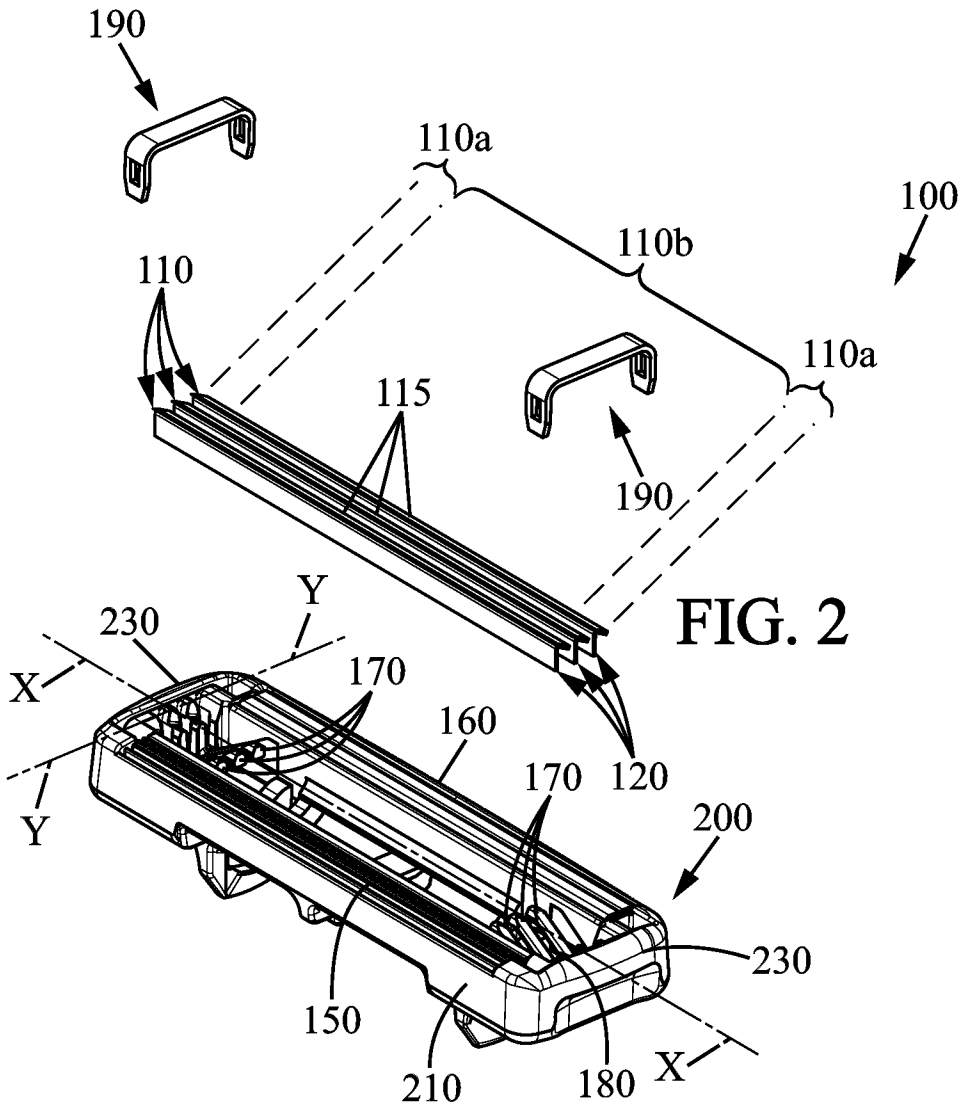
120

FIG. 1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110b
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190
Y
230
X
170
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170
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Y
200
230
150
210
180
X

FIG. 2

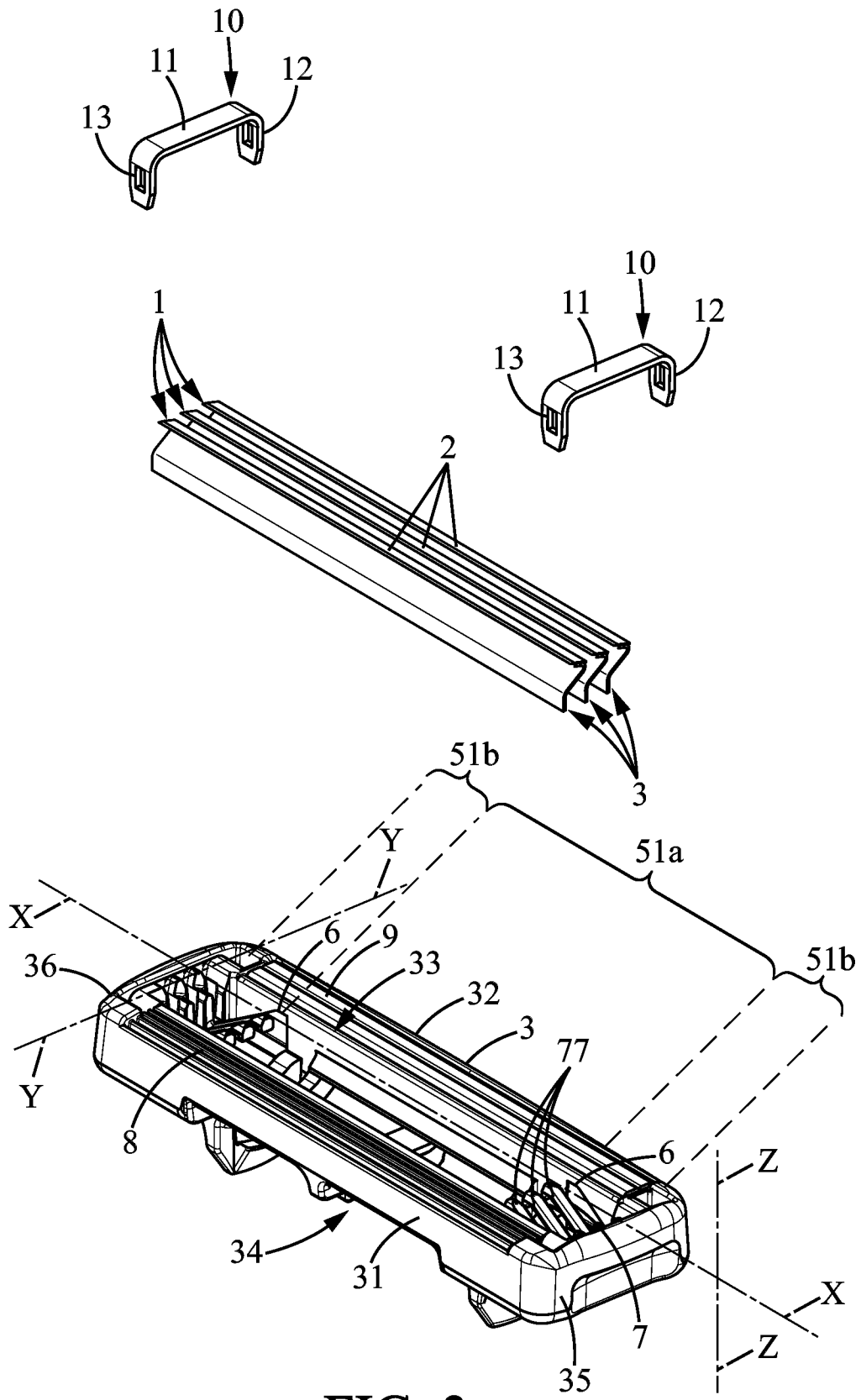

FIG. 3

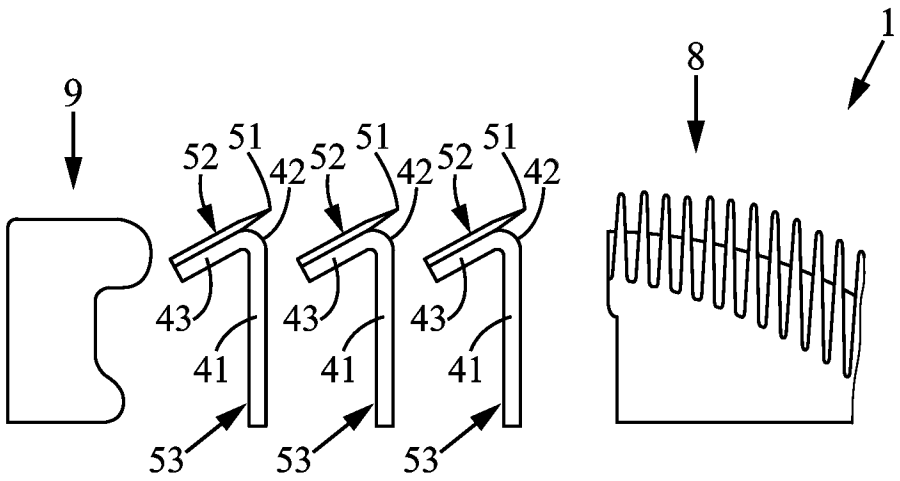

FIG. 4

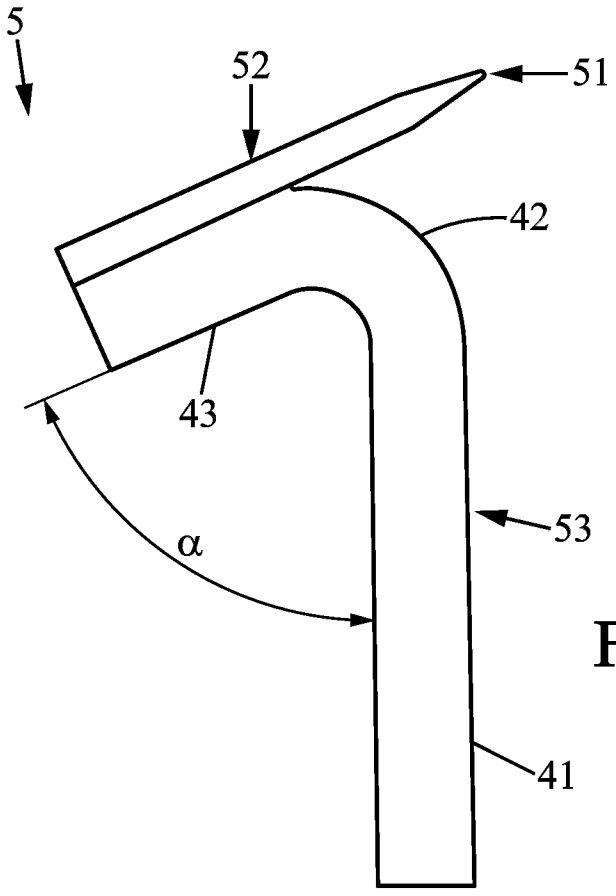

FIG. 6

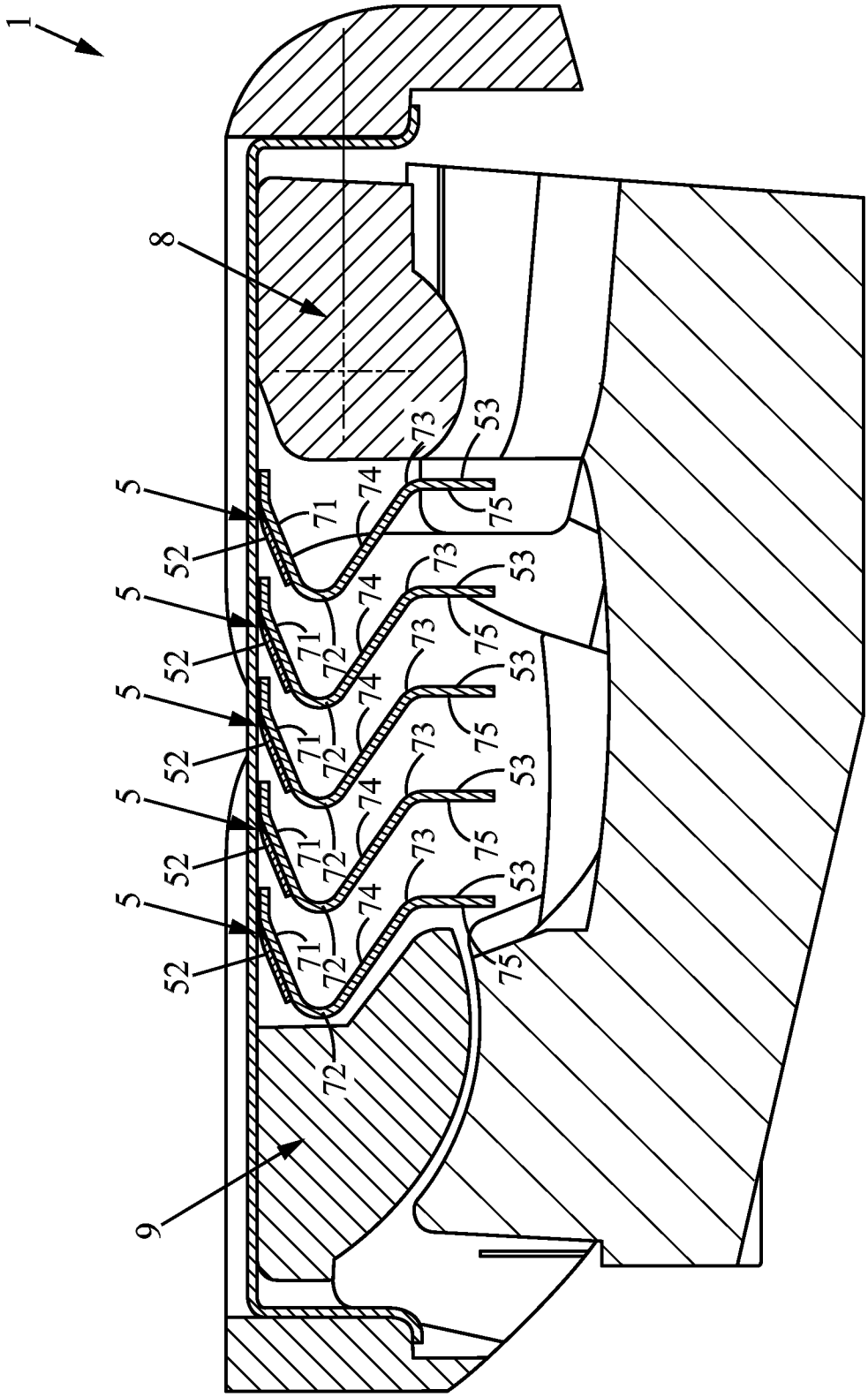

FIG. 5

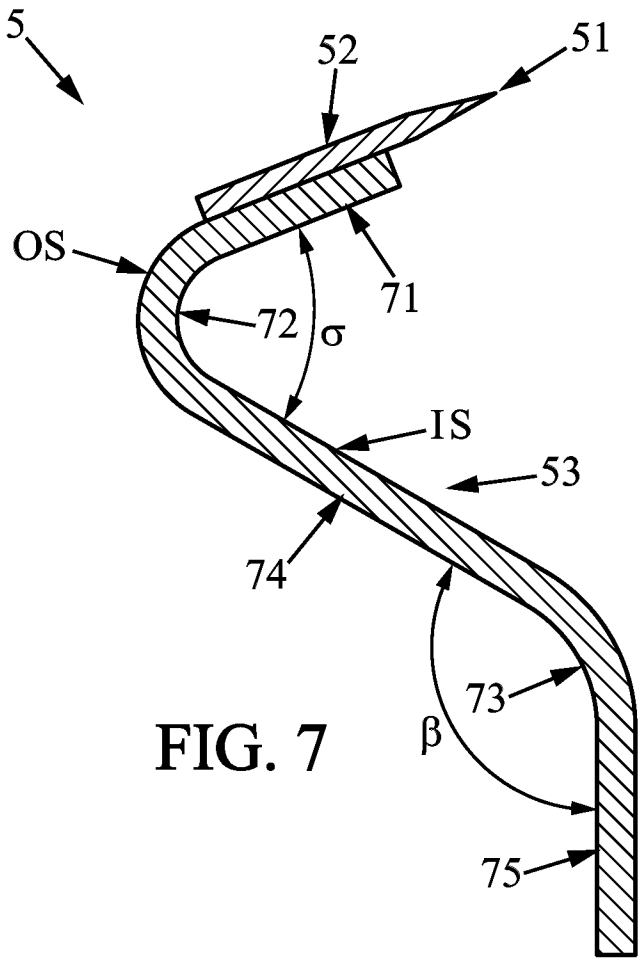

FIG. 7

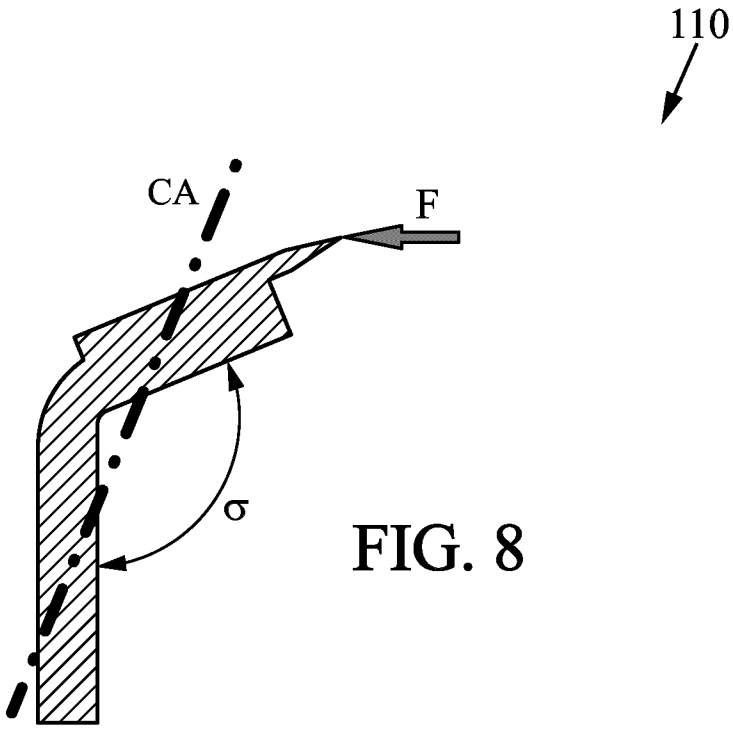

FIG. 8

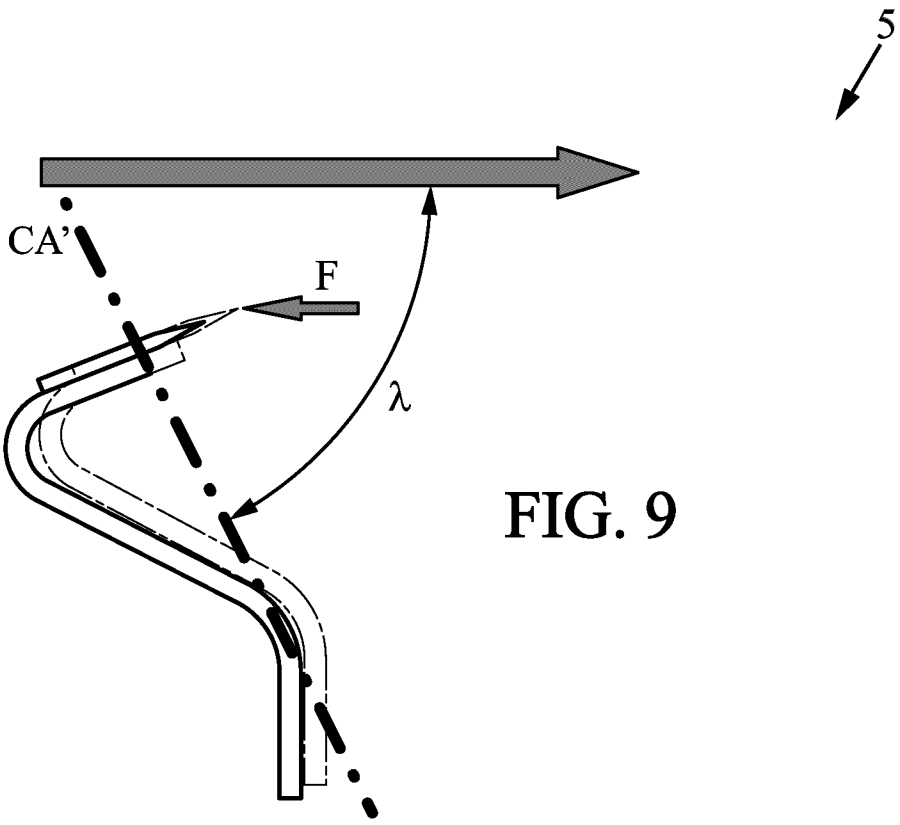

FIG. 9

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/064844

A. CLASSIFICATION OF SUBJECT MATTER
INV. B26B21/22
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B26B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 September 2017	04/10/2017

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Klintebäck, Daniel

1

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International application No
PCT/EP2017/064844

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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X Y	WO 91/19597 A1 (GILLETTE CO [US]) 26 December 1991 (1991-12-26) page 4, line 30 - page 15, line 24; figures 1-13 -----	1-5, 10-13 6-9

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