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(54) **PERSONAL GROOMING APPLIANCE**

(57) The subject-matter of the present disclosure relates to a personal grooming appliance (100) comprising an operational head (104) with a part (108) having an adjustable position, and a position setting assembly (110) configured to set a position of the part. The assembly

comprising a spine (112) and a locking element (114). The locking element is configured to releasably engage with the spine, and the spine and the locking element comprise a plurality of interlocking triangularly shaped teeth (116, 120).

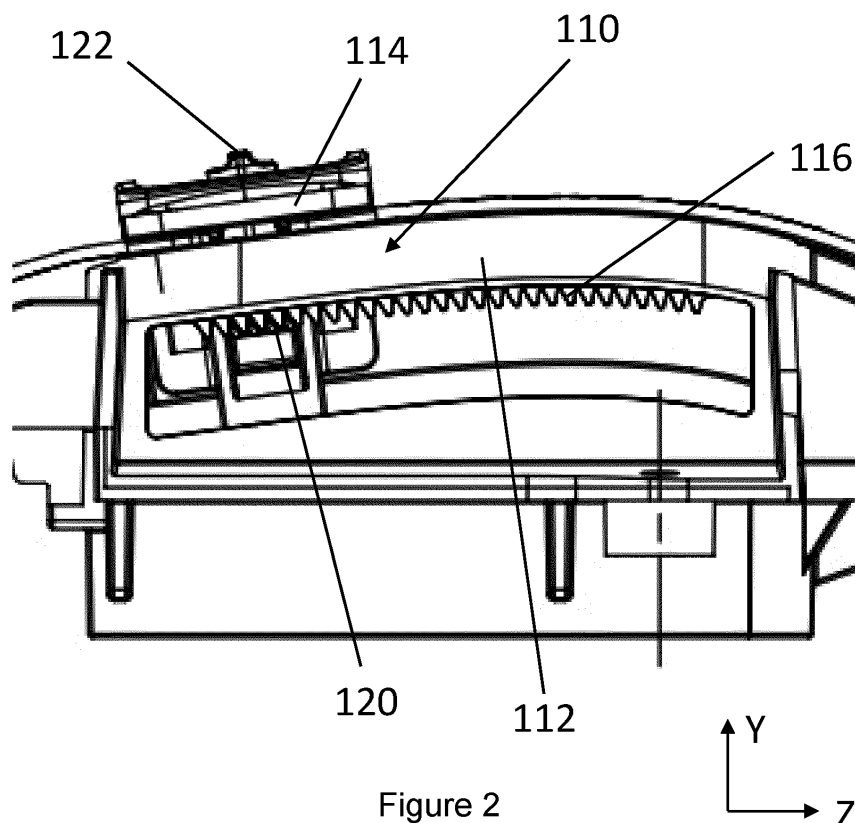


Figure 2

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Description

FIELD OF THE INVENTION

[0001] The subject-matter of the present disclosure relates to a personal grooming appliance, in particular a personal grooming appliance with a length setting functionality (e.g., a length of a trimming function).

BACKGROUND OF THE INVENTION

[0002] Hair clippers usually comprise two sets of sharpened tooth-like blades which oscillate from side to side to form a cutting motion. The clipper may be moved (using a handle) so hair is positioned between the blades and cut with a scissor action when one set of blades slides sideways relative to the other set of blades.

[0003] Historically, clippers would be provided with a comb attachment which set a length of the hair cut by ensuring a set separation between scalp and the sharpened blades. More recently, however, it has become common for such a comb attachment to be variable in length. That is, rather than one comb attachment being for one length of hair, a single comb attachment can be changed in position to change the length of haircut.

[0004] Current clippers which comprise mechanical means for varying a length of hair cut typically do so by offering control of the comb in step sizes of around 2 mm. Step sizes less than 2 mm have been previously achieved using a complicated arrangement of spaced apart biased limbs which alternately engage with the comb attachment to set its length/position, as described by e.g., WO2014/090429.

[0005] It is now desirable to provide an alternative means for achieving sub 2 mm positional (stepwise) adjustment of a hair clipper suitable for a wide range of devices.

SUMMARY OF THE INVENTION

[0006] The present invention is defined according to the independent claims. Additional features will be appreciated from the dependent claims and the description herein. Any embodiments which are described but which do not fall within the scope of the claims are to be interpreted merely as examples useful for a better understanding of the invention.

[0007] It is an aim of the present invention to overcome one or more of the deficiencies with personal grooming appliances, whether those deficiencies have been explicitly mentioned above or will be otherwise apparent from the discussion herein.

[0008] According to a first aspect of the present invention, there is provided a personal grooming appliance comprising an operational head (such as a hair clipper) including at least one part with an adjustable position, and a position setting assembly configured to set a position of the adjustable part (e.g., a separation from a cutting

implement to set a length of hair trim, such as a clipper comb). The position setting assembly comprises a spine and a locking element, wherein the locking element is configured to releasably engage with the spine, and wherein the spine and the locking element comprise a plurality of interlocking triangularly shaped teeth. The triangularly shaped teeth are particularly advantageous for achieving sub 2 mm step size in the position adjustable part while maintaining suitable strength to withstand forces experienced by the position setting assembly during operation of the device.

[0009] In an example, the triangularly shaped teeth are configured with a peak to peak delta of about 0.5 mm to about 1.5 mm, preferably about 1 mm, and may have a rounded peak shape. In an example, the triangularly shaped teeth are configured with a height of about 0.8 mm to about 0.95 mm. In an example, the triangularly shaped teeth are configured with a base width of about 0.8 mm to 1 mm. Thus the dimensions of the triangularly shaped teeth may be advantageously set to fit with existing position setting assemblies on many personal grooming appliances.

[0010] In a preferred example, the triangularly shaped teeth are scalene shaped; that is, comprising a short wall, a long wall, and a base, each of different lengths, with the short wall and long wall being for engagement. In a further preferred example, the short engagement wall of each tooth on the spine is oriented towards a head portion of the personal grooming appliance, so as to provide better stability to the position setting assembly (i.e., so the interlock is less likely to accidentally disengage).

[0011] In an example, the spine is arranged centrally with respect to a width of the personal grooming appliance, the width being orthogonal to the direction of movement of the adjustable part.

[0012] In an example, the position setting assembly comprises a button configured to release the locking element from engagement with the spine when the button is actuated.

[0013] In an example, the locking element is configured to slidably move with respect to the spine when the locking element is disengaged from the spine.

[0014] In an example, the position setting assembly comprises an electric motor configured to move the locking element with respect to the spine when the locking element is disengaged from the spine.

[0015] These and other aspects of the present invention will be apparent from and elucidated with reference to the embodiment(s) described hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The embodiments of the present inventions may be best understood with reference to the accompanying figures, in which:

Fig. 1 shows an example personal grooming appliance;

Fig. 2 shows a side view of a position setting assembly for the example grooming appliance; and Fig. 3 shows a top view of the position setting assembly;

Fig. 4 shows a bi-section through the position setting assembly according to the line A-A in Fig. 3;

Fig. 5 shows an example of interlocking teeth for the position setting assembly.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0017] With reference to Figs. 1 to 5, there is shown an example personal grooming appliance 100. The grooming appliance 100 comprises a handle, or body, 102 for gripping and manipulating the appliance 100, an operational head 104 configured to provide a grooming operation, and a function button 106 (e.g., an on-off button) for controlling the operational head 104 (and optionally any other functions of the appliance 100).

[0018] The operational head 104 comprises at least one adjustable part 108 having an adjustable position. That is, a part which may be at least partly displaced in an X direction, Y direction, or Z direction, or combination thereof, with respect to the body 102 and/or any fixed component of the operational head 104.

[0019] For example, the operational head 104 may provide a hair clipping function, suitably comprising a cutter (not shown) configured to cut hair via a horizontal (X) motion the cutter. In this case the operational head may also comprise a length setting attachment 108 which is configured to be adjustable in the Z direction - i.e., a direction orthogonal to the X aligned motion of the cutter - either away from or towards the appliance 100. Suitably, by changing the position of the length setting attachment 108, the length of hair that is cut may be changed.

[0020] It will be appreciated that the operational head 104 may also comprise different adjustable components, including different length setting attachments, configured to vary position with respect to different orientations; for example a Y orientation or an X orientation.

[0021] The appliance 100 comprises a position setting assembly 110 configured to set a position (e.g., Z position) of the adjustable part 108. The assembly 110 comprises a spine 112 and a locking element 114.

[0022] The spine 112 comprises a first plurality of triangular shaped teeth 116. In the present example where the attachment 108 is moveable in the Z direction, the spine 112 may be arranged along a back line 118 of the handle 102 so as to be substantially aligned with the direction of motion of the attachment 108. Put another way, the spine 112 is arranged centrally with respect to a width of the handle 102 in the X direction. Suitably, in the present examples, the spine 112 may be taken to be substantially along the line A-A in Fig. 3.

[0023] The locking element 114 comprises a second plurality of triangular shaped teeth 120 correspondingly shaped to the first plurality of teeth 116. Suitably, the triangular shaped teeth 116, 120 of the spine 112 and

locking assembly 114 are configured to interlock. As shown, the first plurality of teeth 116 preferably comprises a greater number of teeth than the second plurality 120.

[0024] The locking element 114 comprises an actuator, or button, 122 configured to separate the first and second plurality of teeth by a translational motion when the button 122 is actuated. That is, by pushing down (in the Y direction) on the button 122, the second plurality of teeth 120 are disengaged from the interlocking position with the first plurality of teeth 116. Put another way, the locking element 114 is configured to releasably engage with the spine 112.

[0025] When in the disengaged state, the locking element 114 is free to slidably move with respect to the spine 112. Suitably, the body/handle 102 may comprise a channel 124, also aligned centrally with respect to a width of handle 102 in the X direction, in which the locking assembly 114 may move. Moving the locking element 114 suitably causes a corresponding movement in the adjustable part 108 so as to set the position of the part 108.

[0026] Suitably, the locking element 114 may also comprise a biasing element 126 which, when the button 122 is released, pushes upwards on the button 122 so as to return the locking element 114 to a configuration in which the second plurality of teeth 120 are (re)engaged with the first plurality of teeth 116. Suitably the position of the adjustable part 108 is set and cannot be moved until the button 122 is actuated again.

[0027] In an alternative example, not shown, the position setting assembly 110 may comprise an electric motor (not shown) configured to move the locking element 114 with respect to the spine 112 when the locking element 114 is disengaged from the spine by actuation of a suitable button.

[0028] Preferably, the triangularly shaped teeth 116, 120 are configured with a peak-to-peak delta 128 - that is, separation - of about 0.5 mm to about 1.5 mm, and further preferably with a peak-to-peak delta of about 1 mm. In this way the appliance 100 is suitably configured for a sub 2 mm step size which has thus far been unachievable mechanically. Further preferably, the triangular shaped teeth comprise a rounded peak portion 130 so as to reduce stresses at the peak during interlock.

[0029] Moreover, the triangularly shaped teeth may be configured with a height 132 of about 0.8 mm to about 0.95 mm, and a base width 134 of about 0.8 mm to 1 mm. It will be appreciated that the base width 134 may be different to the peak-to-peak delta 128 due to a shape of the point of each tooth - e.g., due to any rounding, or flattening, of a tooth tip/peak; that is, the base may be measured between points on the triangular walls just before any shaping of a trough portion corresponding to the peak portion of the opposite set of teeth. In this way the teeth may be designed to readily fit with existing personal grooming appliances, so as to streamline manufacture of new devices and possibly allow the upgrade/retrofit of older devices.

[0030] In an example, the triangularly shaped teeth are scalene shaped. That is, each scalene shaped tooth in the first and second plurality of teeth may comprise a short wall 136, a long wall 138, and a base 134 of different lengths. Scalene shaped teeth are particularly advantageous, as they allow for a better distribution of force across the teeth and therefore better interlocking.

[0031] It will be appreciated that each of the walls 136, 138 are arranged to engage with a corresponding wall of the opposite plurality of teeth, and so may also be termed engagement walls. That is, short wall to short wall, long wall to long wall. It will be appreciated that the base 134 of each tooth does not engage. In a preferred example, the short wall 136 of the first plurality of teeth 116 (i.e., the teeth of the spine 112) are oriented towards a head portion of the appliance 100 - i.e., towards the operational head 104; that is, oriented with a positive Z facing. Arranging the scalene teeth in this orientation provides a stronger interlock able to better withstand forces pushing against the interlocking teeth when the appliance 100 is in use; that is, so that the teeth 116, 120 don't accidentally disengage.

[0032] While the invention has been illustrated and described in detail in the drawings and foregoing description, such illustration and description are to be considered illustrative or exemplary and not restrictive; the invention is not limited to the disclosed embodiments.

[0033] Other variations to the disclosed embodiments can be understood and effected by those skilled in the art in practicing the claimed invention, from a study of the drawings, the disclosure, and the appended claims. In the claims, the word "comprising" does not exclude other elements or steps, and the indefinite article "a" or "an" does not exclude a plurality. A single processor or other unit may fulfil the functions of several items recited in the claims. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to advantage. Any reference signs in the claims should not be construed as limiting the scope.

Claims

1. A personal grooming appliance (100), comprising:

an operational head (104) comprising apart (108) having an adjustable position;
a position setting assembly (110) configured to set a position of the part, the assembly comprising a spine (112) and a locking element (114); wherein the locking element is configured to releasably engage with the spine, and wherein the spine and the locking element comprise a plurality of interlocking triangularly shaped teeth (116, 120).

2. The appliance of claim 1, wherein the triangularly

shaped teeth are configured with a peak to peak delta (128) of about 0.5 mm to about 1.5 mm

3. The appliance of claim 2, wherein the triangularly shaped teeth are configured with a peak to peak delta of about 1 mm

4. The appliance of any preceding claim, wherein the triangularly shaped teeth are configured with a height (132) of about 0.8 mm to about 0.95 mm

5. The appliance of any preceding claim, wherein the triangularly shaped teeth are configured with a base width (134) of about 0.8 mm to 1 mm

6. The appliance of any preceding claim, wherein each tooth of the plurality of triangular shaped teeth comprises a rounded peak (130).

7. The appliance of any preceding claim, wherein the triangularly shaped teeth are scalene shaped.

8. The appliance of claim 7, wherein each scalene shaped tooth in the plurality of triangularly shaped teeth comprises a short engagement wall (136) and a long engagement wall (138), and wherein the short engagement wall of each tooth on the spine is oriented towards a head portion of the personal grooming appliance.

9. The appliance of any preceding claim, wherein the spine is arranged centrally with respect to a width of the personal grooming appliance.

10. The appliance of any preceding claim, wherein the position setting assembly comprises a button (122) configured to release the locking element from engagement with the spine when the button is actuated.

11. The appliance of any preceding claim, wherein the locking element is configured to slidably move (124) with respect to the spine when the locking element is disengaged from the spine.

12. The appliance of any preceding claim, wherein the position setting assembly comprises an electric motor configured to move the locking element with respect to the spine when the locking element is disengaged from the spine.

13. The appliance of any preceding claim, wherein the operational head comprises a hair clipper.

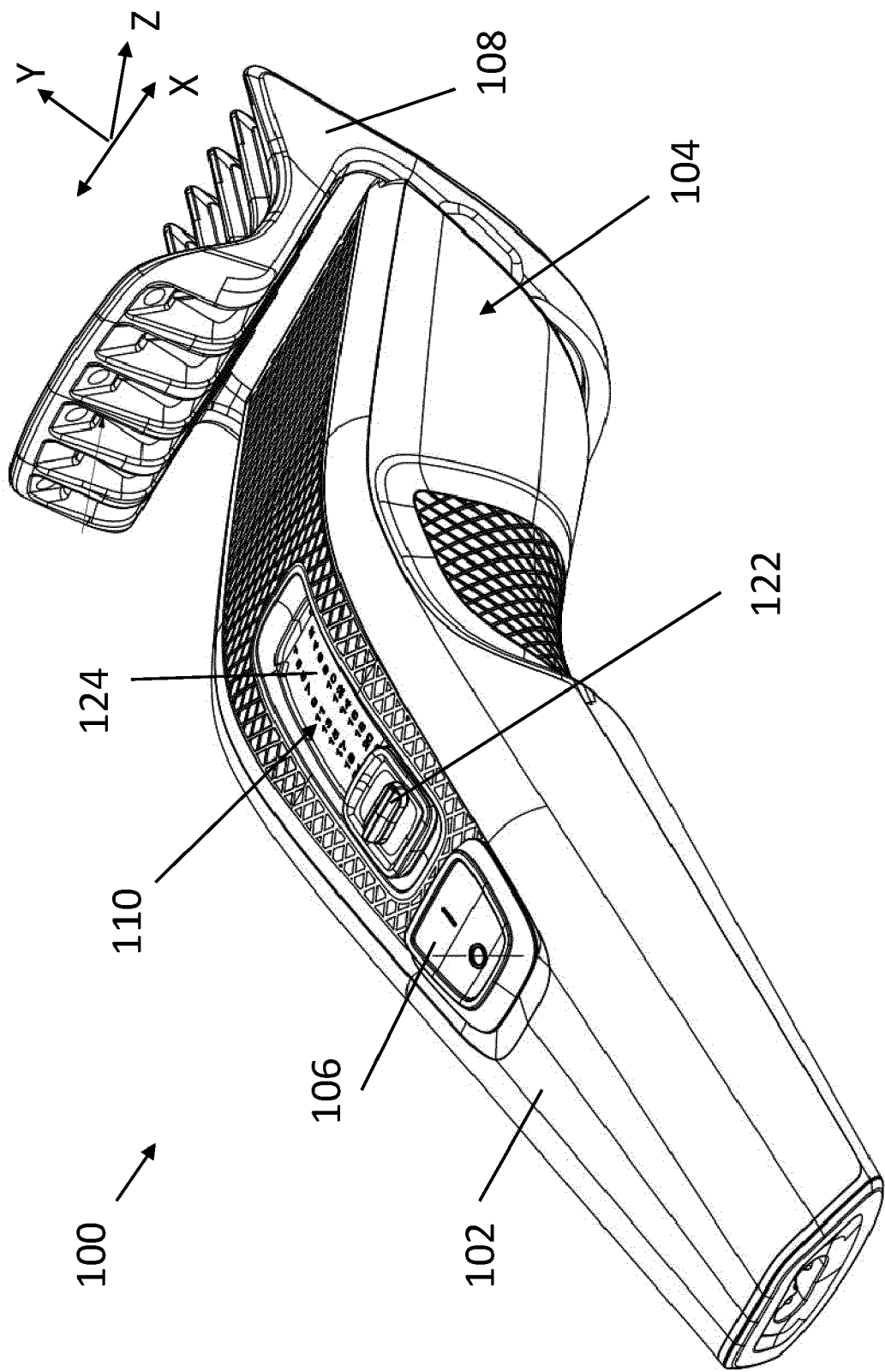
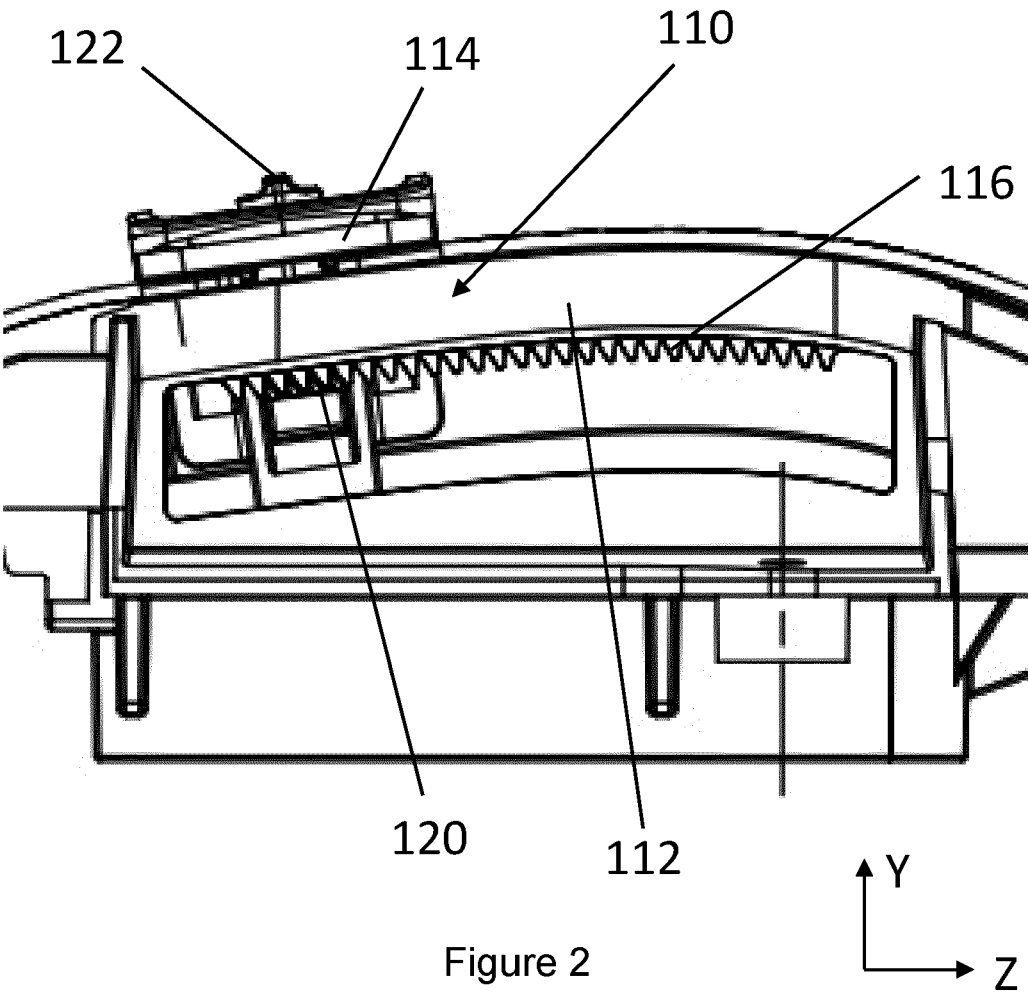


Figure 1



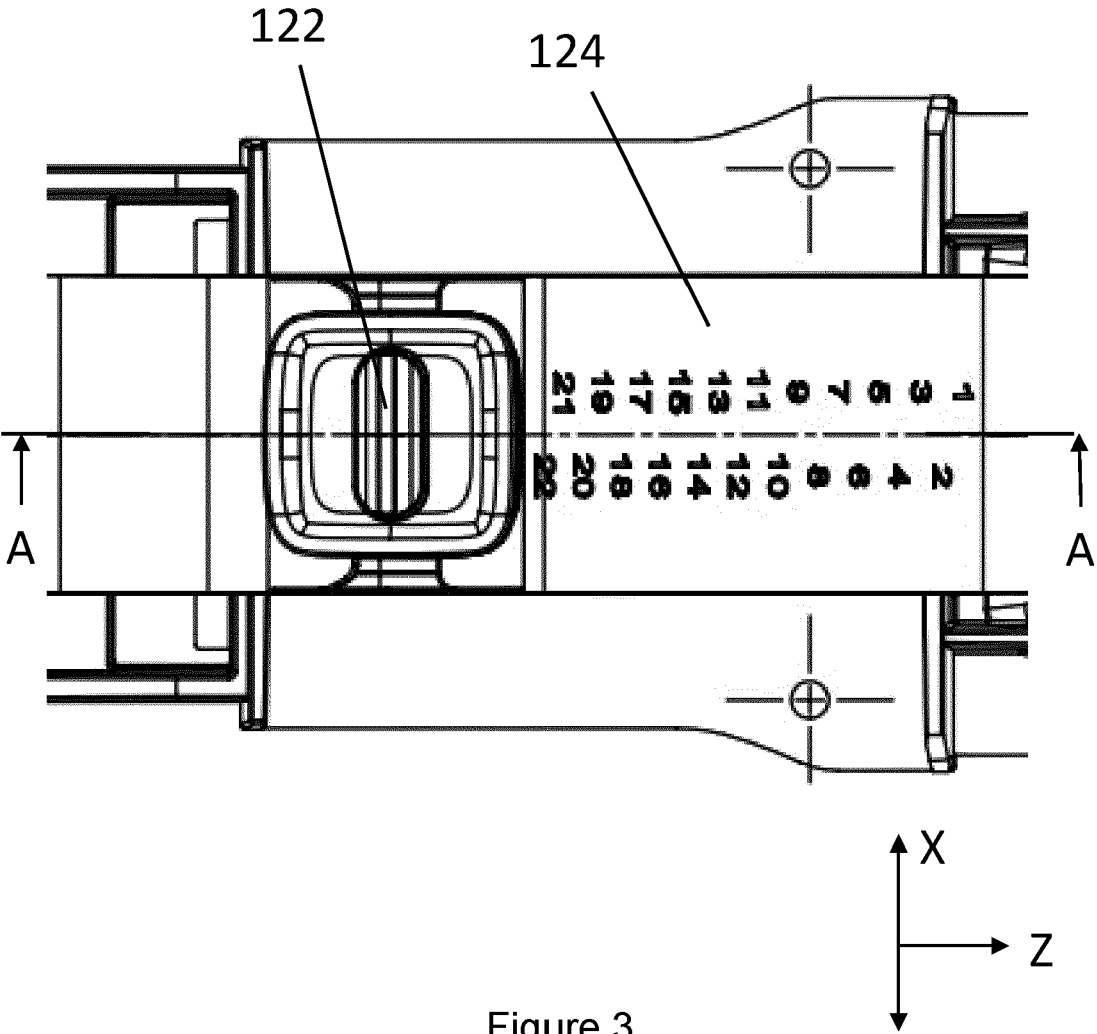


Figure 3

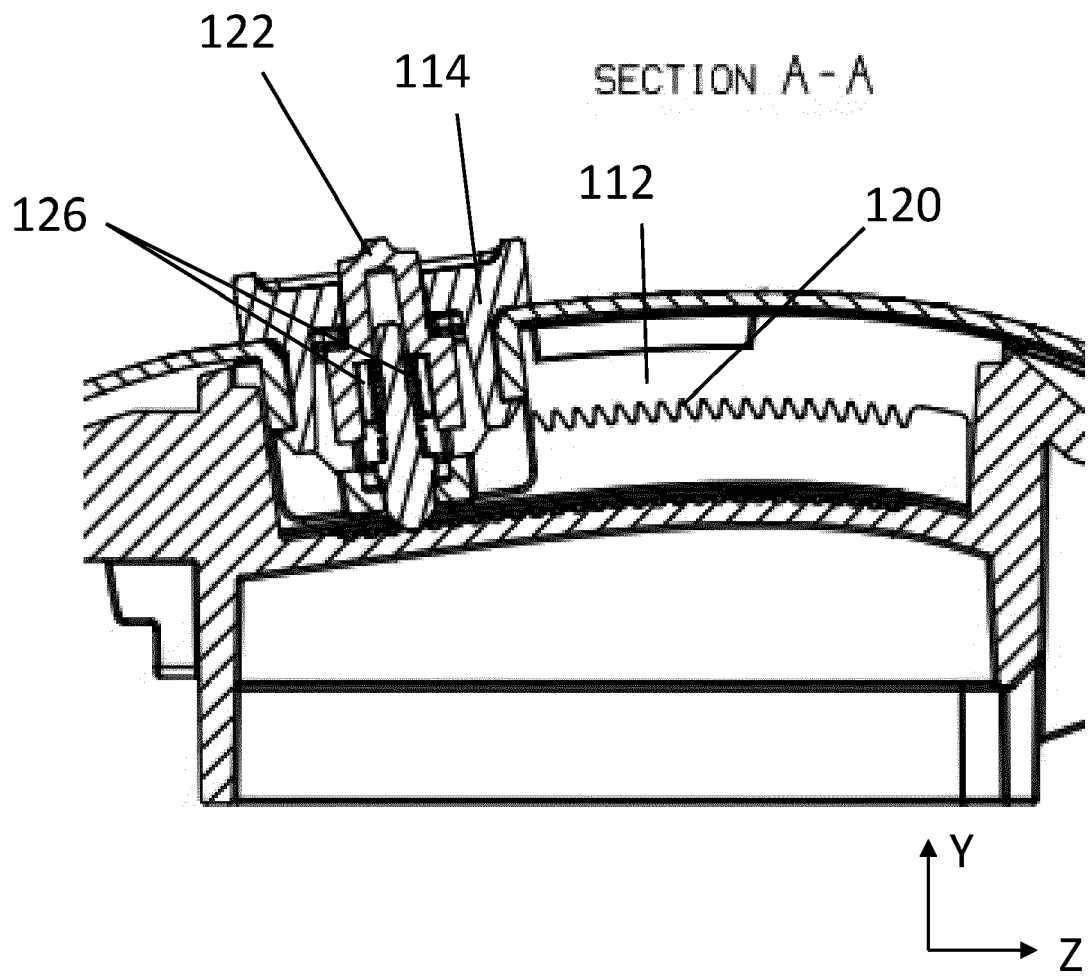


Figure 4

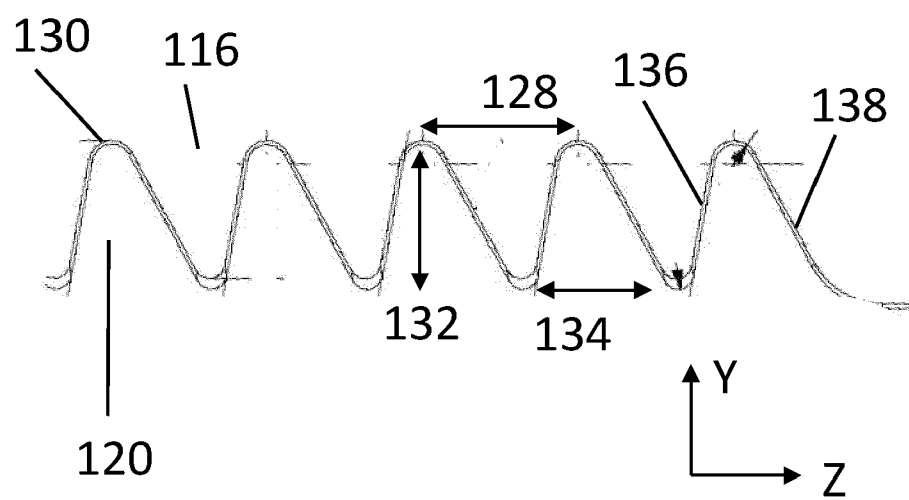


Figure 5



EUROPEAN SEARCH REPORT

Application Number

EP 23 21 0257

DOCUMENTS CONSIDERED TO BE RELEVANT

DOCUMENTS CONSIDERED TO BE RELEVANT		CLASSIFICATION OF THE APPLICATION (IPC)	
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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