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(54) CLUTCH FOR BLINDS

(57) The present invention relates to a chain guard housing and clutch assembly (100, 200) for a blind comprising:
a first end (100', 200') which is able to be inserted into a roller blind tube;
a second end (100", 200") engageable with a wall mounting bracket;
a drive spline (110, 210) forming the outer part of the chain guard housing and clutch assembly (100, 200) which is able to engage with the inside of a roller blind tube;
a chain wheel (120, 220) , connected to the drive spline (110, 210) ;
a chain cover module (130, 230) comprising a rim (132, 232) , the rim covering part of the chain wheel (120, 220) ;
a central pin (114, 214) extending from the drive spline (110, 210) at the first end (100', 200') , the central pin (114, 214) comprising at least one deformable leg (115, 215) engaged with the chain cover (130, 230) via an outward facing catch face (116, 216) on the leg (115, 215) , thus preventing axial movement of the chain cover module (130, 230) relative to the drive spline (110, 210) ; and
a quick release actuator (140, 240) located at a second end (100", 200") of the assembly comprising an inner annular abutment surface (144, 244) in contact with the at least one leg (115, 215).

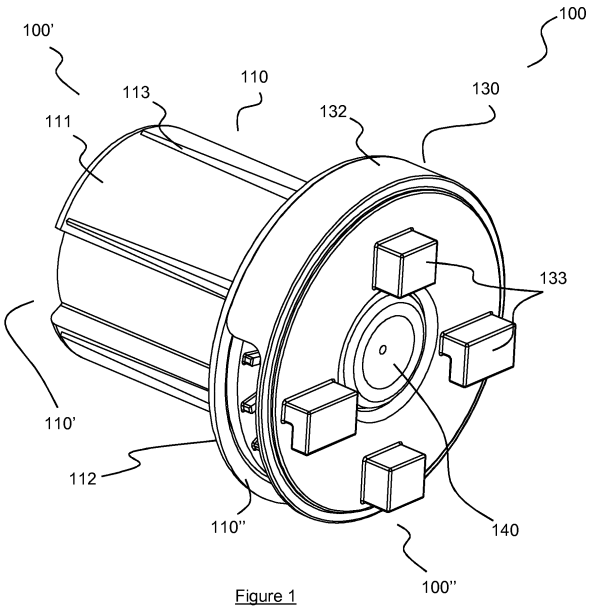

Figure 1

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Description

Field

[0001] The present application is directed to improvements in and relating to clutches for blinds. In particular, the present application relates to chain guard housings and clutch assemblies, such as blind control units including such chain guard housings.

Background Of The Invention

[0002] Chain guard housings typically include a chain cover which overlies a chain wheel (also known as a sprocket) to prevent the chain from disengaging from the chain wheel during use.

[0003] While conventional chain guard housings prevent the disengagement of the chain from the chain wheel during use, they also make removing the chain difficult when desired. It can be difficult to remove the chain cover from the chain wheel without dismounting and disassembling the entire blind control unit. However, repeated disassembly of the blind control unit gradually loosens the connections between parts, especially those that engage in a push-fit or screw arrangement. Furthermore, repeated dismounting of the blind control unit from the roller blind tube can be difficult when there is a tight fit and this tight fit will gradually loosen on repeated disassembly/assembly.

[0004] Further problems, such as the roller blind assembly falling apart, can occur when removing these chain cover/wheel mechanisms from the roller blind assembly. Some known devices may include an intermediate stop which aims to prevent the roller blind assembly falling apart, however, the assembly still has to be removed from the roller blind tube to release the chain cover/wheel mechanism. Some other attempts to overcome these problems have yielded mechanisms which are difficult to actuate in the tight spaces between the wall and the blind control unit. For example, the mechanism disclosed in WO2014033474 requires the user to pinch two pins together. This may not be possible for some users, depending on the size of their fingers and thumbs for example, and may require the use of a tool, particularly if the control unit is still mounted.

[0005] The current invention aims to provide a quick-release mechanism for inserting or removing a chain from a roller blind assembly without the need for disassembling the remainder of the control unit and even without dismounting the roller blind, which can be actuated by pressing a button without the use of any implements or tools.

Summary

[0006] Accordingly, the present application provides an improved chain guard housing and clutch assembly (100, 200) for a blind comprising,

a first end (100', 200') which is inserted into a roller blind tube;
a second end (100", 200") engageable with a wall mounting bracket;
a drive spline (110, 210) forming the outer part of the chain guard housing and clutch assembly which engages with the inside of a roller blind tube;
a chain wheel (120, 220), connected to the drive spline (110, 210);
a chain cover module (130, 230) comprising a rim (132, 232), the rim covering part of the chain wheel (120, 220);
a central pin (114, 214) extending from the drive spline at the first end, the central pin comprising at least one deformable leg (115, 215) engaged with the chain cover (131,231) via an outward facing catch face (116, 216) on the leg, thus preventing axial movement of the chain cover module relative to the drive spline; and
a quick release actuator (140, 240) located at a second end of the assembly comprising an inner annular abutment surface (145, 245) in contact with the at least one leg (115, 215).

[0007] Advantageous embodiments are provided in the dependent claims.

Brief Description Of The Drawings

[0008] The present application will now be described with reference to the accompanying drawings in which:

Figure 1 is an isometric view of a Chain Guard Housing and Clutch Assembly according to the present invention;
Figure 2 is a side view of the chain guard housing and clutch assembly of Figure 1;
Figure 3 is an exploded view of the chain guard housing and clutch assembly of Figure 1;
Figure 4 is a side view of the chain guard housing and clutch assembly of Figure 1 in the engaged state;
Figure 5 is a side view of the chain guard housing and clutch assembly of Figure 1 in the disengaged state;
Figure 6a is a longitudinal section view of the chain guard housing and clutch assembly of Figure 1 in the assembled state;

Figure 6b is a close up longitudinal section view of the button and legs of Figure 6a in the assembled state;
Figure 7a is a longitudinal section view of the chain guard housing and clutch assembly of Figure 1 undergoing disengagement;
Figure 7b is a longitudinal section view of the chain guard housing and clutch assembly of Figure 1 in the disengaged state;
Figure 8 is an isometric view of a Chain Guard Housing and Clutch Assembly according to an alternative embodiment of the present invention;
Figure 9 is a side view of the chain guard housing and clutch assembly of Figure 8;
Figure 10 is an exploded view of the chain guard housing and clutch assembly of Figure 8;
Figure 11 is a side view of the chain guard housing and clutch assembly of Figure 8 in the engaged state; Figure 12 is a side view of the chain guard housing and clutch assembly of Figure 8 in the disengaged state;
Figure 13a is a longitudinal section view of the chain guard housing and clutch assembly of Figure 8 in the assembled state;
Figure 13b is a close up longitudinal section view of the button and legs of Figure 13a in the assembled state;
Figure 14a is a longitudinal section view of the chain guard housing and clutch assembly of Figure 8 undergoing disengagement; and
Figure 14b is a longitudinal section view of the chain guard housing and clutch assembly of Figure 8 in the disengaged state.

Detailed Description

[0009] The present application provides an improved chain guard housing and clutch assembly for a blind comprising,
a first end which is inserted into a roller blind tube;
a second end engageable with a wall mounting bracket;
a drive spline forming the outer part of the chain guard housing and clutch assembly which engages with the inside of a roller blind tube;
a chain wheel, connected to the drive spline;
a chain cover module comprising a rim, the rim covering part of the chain wheel; a central pin extending from the drive spline at the first end, the central pin comprising at least one deformable leg engaged with the chain cover via an outward facing catch face on the leg, thus preventing axial movement of the chain cover module relative to the drive spline; and
a quick release actuator located at a second end of the assembly comprising an inner annular abutment surface in contact with the at least one leg.

[0010] Main novelty of this design is the ability to release the chain cover in order to install or change the chain without needing to remove the assembly from the roller tube.

[0011] It will be understood that the chain wheel (120, 220) is operable to engage an operating chain.

[0012] According to a preferred embodiment, the movement of the actuator (140, 240) towards the first end (100', 200') may cause the annular abutment surface to move the at least one leg (115, 215) inwards towards a central axis of the assembly, thus disengaging the drive spline (110, 210) from the chain cover module (130, 230).

[0013] According to another preferred embodiment, the actuator (140, 240) may comprise a button (141, 241) and prongs (142, 242) extending towards the first end of the assembly. In this embodiment, the legs (115, 215) of the central pin (114, 214) surround the prongs (142, 242); and a catch face (117, 217) on the inside of the legs of the central pin abuts a catch face (143, 243) on the outside of the prongs.

[0014] According to yet another embodiment, the chain cover module (130, 230) may comprise one or more protrusions (133, 233) for engaging with a mounting bracket.

[0015] According to still another embodiment the chain cover module (130, 230) may comprise a ledge (135, 235) operable to engage with the at least one leg (115, 215) of the drive spline in a first configuration and with the brim (144, 244) of the button in a second configuration.

[0016] According to yet another embodiment, the chain cover module (130, 230) may have a substantially cylindrical body portion which extends substantially through the drive spline (111,211), the drive spline and chain wheel (120, 220) being rotatable about the body of the chain cover module.

[0017] According to yet another alternative embodiment, there is provided a chain guard housing and clutch assembly wherein at least one retention clip (246) is attached to the chain wheel body (221) at the first end (210').

[0018] It will be understood that both embodiments may use a wrap-spring clutch mechanism. This is a spring type widely used throughout the industry for roller blinds. The wrap-spring (not shown) is intended to fit snugly onto the surface of chain cover body (131/231) with its ends interacting with the inside of the drive spline body (111/211). This enables the roller blind system to be driven with the chain and advantageously prevents chain back drive by pulling the fabric. This is the standard action of a clutch drive mechanism in this industry and one option available to the skilled man.

[0019] The words comprises/comprising when used in this specification are to specify the presence of stated features,

integers, steps or components but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

[0020] Figures 1 to 7 show a first embodiment of the invention and Figures 8 to 14 show a second embodiment of the invention.

Chain guard housing and clutch assembly	100, 200
First end of chain guard housing and clutch assembly	100', 200'
Second end of chain guard housing and clutch assembly	100", 200"
Drive spline or drive bush	110, 210
Drive spline body	111, 211
Drive spline collar	112, 212
Crush ribs	113, 213
Central pin	114, 214
Legs	115, 215
Catch face or locking lug	116, 216
Actuator Retainer or Inward catch face	117, 217
End of leg	118, 218
Chain wheel	120, 220
Chain wheel body	121, 221
Chain wheel collar	122, 222
Teeth on chain wheel	123, 223
Chain cover module	130, 230
Chain cover body	131, 231
Chain cover rim	132, 232
Protrusions or bracket retention claw	133, 233
Abutment surface / ledge	135, 235
Actuator	140, 240
Button	141, 241
Prongs or actuator retaining catch	142, 242
Catch	143, 243
Abutment surface / brim	144, 244
Abutment or actuation surface	145, 245
Retention clips or prongs/prong legs	246

[0021] Referring to Figures 1 and 2, there is shown a chain guard housing and clutch assembly 100 for a blind according to one embodiment of the invention.

[0022] The chain guard housing and clutch assembly 100 connects to a roller blind tube by inserting the first end 100' into the roller blind tube and to a wall fixture at the second end 100". The chain guard housing and clutch assembly 100 comprises a drive spline 110 which engages with the roller blind tube and houses a chain wheel 120, a chain cover 130 and a quick chain release button 140.

[0023] The drive spline 110, or drive bush, forms the outer part of the chain guard housing and clutch assembly 100

which connects to a roller blind tube. The drive spline 110 has a generally cylindrical body 111, closed at one end 110' and open at the second end 110". The drive spline 110 comprises a collar 112 near the second end 110". The drive spline comprises crush ribs 113, which may be resilient, which enable a push fit arrangement with the roller blind tube. While the drive spline 110 is removable from the roller blind tube, it is preferable to leave it in place as repeated removal and insertion may gradually loosen the fixture. A central pin 114 comprising two legs 115, each comprising catch faces or locking lugs 116, extends from one end 110', through the body 111 of the drive spline 110, and protrudes from the open end 110".

[0024] Referring to Figure 3, the chain wheel 120, or sprocket, comprises a generally cylindrical body 121 and a collar 122. The collar comprises teeth 123. The chain wheel 120 engages the drive spline 110 in use. The chain wheel 120 is rotatable relative to the chain cover 130, and the teeth 123 are dimensioned to engage the chain of a standard blind such that when the chain is drawn, the chain wheel 120 rotates, bringing the drive spline 110 and roller blind tube (not shown) with it.

[0025] Referring to Figure 3, the chain cover module 130 comprises a cylindrical body 131 and a rim 132. The rim 132 covers part of the chain wheel collar 122 such that the chain is unable to disengage from the teeth 123. This is especially important during rotation. However, once the chain guard housing and clutch assembly 100 is fully assembled, the rim 132 also prevents the insertion or removal of a chain.

[0026] Referring to Figure 3, the chain cover module 130 comprises protrusions or bracket retention claw 133 operable to couple with a mounting bracket (not shown) for mounting the chain cover module 130 onto a wall. The chain cover module 130 remains static during rotation of the chain wheel 120, the drive spline 110 and the roller blind tube.

[0027] Referring to Figure 3, the actuator 140 is operable to allow the release of the chain cover 130 from the chain wheel 120 in order to insert or remove a chain without removing the drive spline 110 from the roller blind tube. The mechanism of the actuator 140 will be discussed in detail in due course.

[0028] Referring now to Figure 3, which is an exploded view of the chain guard housing and clutch assembly 100, it can be seen that the actuator 140 is receivable in the chain cover 130; the body 131 of the chain cover 130 is receivable in the body 121 of the chain wheel 120; and the chain wheel 120 is receivable in the drive spline 110.

[0029] The actuator 140 resembles a two-prong rivet, and comprises a button 141 and two prongs or actuator retaining catches142 which extend into the chain cover module 130. The prongs or actuator retaining catches may comprise a resilient material.

[0030] Figure 4 is a side view of the chain guard housing and clutch assembly 100 in the engaged state. In the engaged state the rim 132 of the wheel cover 130 covers a portion of the chain wheel 120, such that the chain cannot become disengaged from the teeth 123 during rotation. In the engaged state, the cylindrical body 131 of the wheel cover 130 is fully inserted into the chain wheel 120.

[0031] Figure 5 shows the disengaged state, in which the rim 132 of the chain wheel cover 130 does not cover the teeth 123. In this disengaged state, the chain may be inserted into or removed from the chain guard housing and clutch assembly 100.

[0032] Figures 6a and 6b details the manner in which the various components come together to form the chain guard housing and clutch assembly 100 in the engaged state. In this view, the features of the actuator 140 can be seen more clearly. The button 141 comprises an inner and an outer annular abutment surface. The outer annular abutment surface, or brim, 144 faces the far end 110' of the assembly in use. The inner annular actuation surface 145 faces diagonally towards the far end 100' and in towards the central axis of the chain guard housing and clutch assembly.

[0033] The drive spline 110 comprises two resilient legs 115 (together called a central pin) to engage with the wheel chain cover 130. The resilient legs 115 extend from the first end 100' of the chain guard housing and clutch assembly 100 towards the open end 100". The legs 115 each comprise an outer catch face 116, which faces the first end 100' and operably engages with an abutment surface or ledge 135 on the inside of the body 131 of the wheel chain cover 130, thus preventing removal of the chain cover from the drive spline. The end 118 of each leg 115 abuts the actuation surface 145 of the actuator 140. The legs 115 each comprise an inward facing catch face or actuator retainer 117 which operably engages with outward facing catches 143 on the ends of the prongs or actuator retaining catches 142 of the actuator 140. Legs 115 and outward facing catches 143 prevent the removal of the actuator. Thus, the various components of the chain guard housing and clutch assembly 100 are held together by the legs 115 which engage with ledge 135 on the wheel chain cover 130.

[0034] Inward movement of button 141 ultimately results in the movement of the chain cover 130 away from the drive spline 110 to uncover the teeth 123 of the chain wheel in order to insert or remove a chain. Figures 7a and 7b show the mechanism of the quick release actuator 140 in action.

[0035] First, referring to Figure 7a, when the actuator 140 is pressed inwards, the annular actuation surface 145 on the actuator presses against the ends 118 of the resilient legs 115 of the drive spline, thereby pushing the legs inwards together so that the legs 115 no longer engage the chain wheel cover 130 via abutment surfaces 116 and 135. Thus, the drive spline 110 and the chain cover 130 are disengaged.

[0036] As shown in Figure 7b, once the chain wheel cover 130 is no longer held in place by the legs 115, it may be

partially slid out of the drive spline 110 to expose the chain wheel and allow insertion or removal of a chain.

[0037] The chain wheel cover is only partially removed by this mechanism as the brim 144 of the actuator 140 abuts the ledge 135 of the chain wheel cover 130 preventing complete removal.

[0038] In situations where the chain may need to be disengaged without dismounting the blind, the movement of the drive spline 110 away from the chain wheel cover 130 can affect the movement of the drive spline further into the roller blind tube. Since the drive spline 110 and roller blind tube are engaged by a push fit mechanism, the drive spline 110 can engage the roller blind tube at a variety of depths. This capacity may be useful if the chain has become accidentally disengaged from the chain wheel 120 and needs to be reinserted, for example. The actuator 140 may be actuated while the chain wheel cover 130 is still mounted to the mounting bracket through an aperture formed therein.

[0039] Alternatively, the blind can be dismounted from the wall bracket by disconnecting the protrusions or bracket retention claw 133 on the chain wheel cover from the mounting bracket prior to actuation of the quick release actuator 140. This may be useful when a new chain is required or when the blind is taken down for cleaning, for example.

[0040] Although not shown, it should be understood that simply pushing the drive spline 110 and chain wheel cover 130 towards each other returns the chain guard housing and clutch assembly to the assembled operating state shown in Figure 6a.

[0041] Figures 8 to 14b show an alternative embodiment of the chain guard housing and clutch assembly according to the present invention.

[0042] Referring to Figures 8 and 9, there is shown a chain guard housing and clutch assembly 200 for a blind according to a second embodiment of the invention. It will be understood that the mechanism of action between these two embodiments remains the same, and the optional design changes are mainly for ease of manufacture and/or moulding.

[0043] The chain guard housing and clutch assembly 200 connects to a roller blind tube by inserting the first end 200' into the roller blind tube and to a wall fixture at the second end 200". The chain guard housing and clutch assembly 200 comprises a drive spline 210 which engages with the roller blind tube and houses a chain wheel 220, a chain cover 230 and a quick chain release button 240.

[0044] The drive spline 210, or drive bush, forms the outer part of the chain guard housing and clutch assembly 200 which connects to a roller blind tube. The drive spline 210 has a generally cylindrical body 211, closed at one end 210' and open at the second end 210". The drive spline 210 comprises a collar 212 near the second end 210". The drive spline comprises crush ribs 213, which may be resilient, which enable a push fit arrangement with the roller blind tube. While the drive spline 210 is removable from the roller blind tube, it is preferable to leave it in place as repeated removal and insertion may gradually loosen the fixture. A central pin 214 (shown in Figure 10) comprising two legs 215 (shown in Figs 13a, 13b; and in Figs 14a and 14b), each comprising catch faces or locking lugs 216, extends from one end 210', through the body 211 of the drive spline 210, and protrudes from the open end 210". It will be noted that drive spline 111 of the first embodiment has a different design to drive spline 211 of the second embodiment. Specifically, an end bevel has been added to the drive spline 211 and the ends of crush ribs 213 are visually different. This revised larger bevel, which has a more gradual taper, aims to aid easier initial insertion onto the roller tube.

[0045] In this embodiment, protrusions 233 shown in Figures 8 and 10 have a different shape to those shown in the first embodiment. The skilled person will understand that any suitable shape, e.g. claw-like shape, may be used which provides good angular tolerance and reduces the need for critical accuracy with regard to the placement/positioning of the bracket.

[0046] As shown in Figure 10, the chain wheel 220, or sprocket, comprises a generally cylindrical body 221 and a collar 222. At least one or more, preferably two, retention clips or prong legs 246 are attached to the cylindrical body 221 to aid retention of the chain drive body in the drive spline body. These retention clips are optional and not included in the first embodiment. The retention clips have been added to this embodiment to ensure the chain wheel (120) is securely retailed in the drive spline body. This aims to minimize the risk of the chain wheel dismantling from the system on use. The collar 222 comprises teeth 223. It is noted that the chain wheel collar 222 of Figure 10 has a different construction to the chain wheel collar 122 of Figure 3. The chain wheel 220 engages the drive spline 210 in use. The chain wheel 220 is rotatable relative to the chain cover 230, and the teeth 223 are dimensioned to engage the chain of a standard blind such that when the chain is drawn, the chain wheel 220 rotates, bringing the drive spline 210 and roller blind tube (not shown) with it. In the first embodiment, the chain is driven on one side (teeth 123). In this second embodiment, the chain has offset details to drive on both sides of the chain (teeth 223). This provides for increased stability with the second embodiment. The collar (122,222) has slightly different designs to accommodate the moulding of the different teeth (123, 223). Both designs can be found on existing products in the market and are known in this field.

[0047] As shown in Figure 10, the chain cover module 230 comprises a cylindrical body 231 and a rim 232. The rim 232 covers part of the chain wheel collar 222 such that the chain is unable to disengage from the teeth 223. This is especially important during rotation. However, once the chain guard housing and clutch assembly 200 is fully assembled, the rim 232 also prevents the insertion or removal of a chain.

[0048] As shown in Figure 10, the chain cover module 230 comprises protrusions or bracket retention claw 233 operable to couple with a mounting bracket (not shown) for mounting the chain cover module 230 onto a wall. The chain cover

module 230 remains static during rotation of the chain wheel 220, the drive spline 210 and the roller blind tube. The skilled person will understand that any suitable shape, e.g. claw-like shape etc, may be used to retail the roller, and that the increased space within the claw allows increased angular tolerance which reduces the need for critical accuracy with regard to the placement and/or positioning of the bracket

[0049] As shown in Figure 10, the actuator 240 is operable to allow the release of the chain cover 230 from the chain wheel 220 in order to insert or remove a chain without removing the drive spline 210 from the roller blind tube. The mechanism of the actuator 240 will be discussed in detail in due course.

[0050] Referring now to Figure 10 specifically, which is an exploded view of the chain guard housing and clutch assembly 200, it can be seen that the actuator 240 is receivable in the chain cover 230; the body 231 of the chain cover 230 is receivable in the body 221 of the chain wheel 220; and the chain wheel 220 is receivable in the drive spline 210.

[0051] Similar to the first embodiment, the actuator 240 resembles a two-prong rivet, and comprises a button 241 and two prongs or actuator retaining catches 242 which extend into the chain cover module 230. The prongs or actuator retaining catches may comprise a resilient material. As shown in Figure 10, changes have been made to the outward appearance of actuator 242 compared to actuator 142 of Figure 3. These changes have been made to facilitate the easy moulding of this part. The actuator design as shown in the first embodiment 142 can be difficult to mould, potentially requiring the moulding and assembly of 2 separate components. The second embodiment, actuator 242, achieves the same function and the same action and has been designed to be more straightforward to mould in one piece. Other design changes may be contemplated so long as the mechanism of action remains the same.

[0052] Figure 11 is a side view of the chain guard housing and clutch assembly 200 in the engaged state. In the engaged state the rim 232 of the wheel cover 230 covers a portion of the chain wheel 220, such that the chain cannot become disengaged from the teeth 223 during rotation. In the engaged state, the cylindrical body 231 of the wheel cover 230 is fully inserted into the chain wheel 220.

[0053] Figure 12 shows the disengaged state, in which the rim 232 of the chain wheel cover 230 does not cover the teeth 223. In this disengaged state, the chain may be inserted into or removed from the chain guard housing and clutch assembly 200.

[0054] Figures 13a and 13b details the manner in which the various components come together to form the chain guard housing and clutch assembly 200 in the engaged state. In this view, the features of the actuator 240 can be seen more clearly. The button 241 comprises an inner and an outer annular abutment surface. The outer annular abutment surface, or brim, 244 faces the far end 210' of the assembly in use. The inner annular actuation surface 245 faces diagonally towards the far end 200' and in towards the central axis of the chain guard housing and clutch assembly.

[0055] The drive spline 210 comprises two resilient legs 215 (together called a central pin) to engage with the wheel chain cover 230. The resilient legs 215 extend from the first end 200' of the chain guard housing and clutch assembly 200 towards the open end 200". The legs 215 each comprise an outer catch face 216, which faces the first end 200' and operably engages with an abutment surface or ledge 235 on the inside of the body 231 of the wheel chain cover 230, thus preventing removal of the chain cover from the drive spline. The end 218 of each leg 215 abuts the actuation surface 245 of the actuator 240. The legs 215 each comprise an inward facing catch face or actuator retainer 217 which operably engages with outward facing catches 242/243 on the ends of the prongs or actuator retaining catches 242 of the actuator 240. Legs 215 and outward facing catches 242/243 prevent the removal of the actuator. Thus, the various components of the chain guard housing and clutch assembly 200 are held together by the legs 215 which engage with ledge 235 on the wheel chain cover 230.

[0056] Inward movement of button 241 ultimately results in the movement of the chain cover 230 away from the drive spline 210 to uncover the teeth 223 of the chain wheel in order to insert or remove a chain.

[0057] Figures 14a and 14b show the mechanism of the quick release actuator 240 in action.

[0058] First, referring to Figure 14a, when the actuator 240 is pressed inwards, the annular actuation surface 245 on the actuator presses against the ends 218 of the resilient legs 215 of the drive spline, thereby pushing the legs inwards together so that the legs 215 no longer engage the chain wheel cover 230 via abutment surfaces 216 and 235. Thus, the drive spline 210 and the chain cover 230 are disengaged.

[0059] As shown in Figure 14b, once the chain wheel cover 230 is no longer held in place by the legs 215, it may be partially slid out of the drive spline 210 to expose the chain wheel and allow insertion or removal of a chain.

[0060] The chain wheel cover is only partially removed by this mechanism as the brim 244 of the actuator 240 abuts the ledge 235 of the chain wheel cover 230 preventing complete removal.

[0061] In situations where the chain may need to be disengaged without dismounting the blind, the movement of the drive spline 210 away from the chain wheel cover 230 can affect the movement of the drive spline further into the roller blind tube. Since the drive spline 210 and roller blind tube are engaged by a push fit mechanism, the drive spline 210 can engage the roller blind tube at a variety of depths. This capacity may be useful if the chain has become accidentally disengaged from the chain wheel 220 and needs to be reinserted, for example. The actuator 240 may be actuated while the chain wheel cover 230 is still mounted to the mounting bracket through an aperture formed therein.

[0062] Alternatively, the blind can be dismounted from the wall bracket by disconnecting the protrusions or bracket

retention claw 233 on the chain wheel cover from the mounting bracket prior to actuation of the quick release actuator 240. This may be useful when a new chain is required or when the blind is taken down for cleaning, for example. Although not shown, it should be understood that simply pushing the drive spline 210 and chain wheel cover 230 towards each other returns the chain guard housing and clutch assembly to the assembled operating state shown in Figure 13

Claims

1. A chain guard housing and clutch assembly for a blind comprising,
a first end which is inserted into a roller blind tube;
a second end engageable with a wall mounting bracket;
a drive spline forming the outer part of the chain guard housing and clutch assembly which engages with the inside of a roller blind tube;
a chain wheel, connected to the drive spline;
a chain cover module comprising a rim, the rim covering part of the chain wheel; a central pin extending from the drive spline at the first end, the central pin comprising at least one deformable leg engaged with the chain cover via an outward facing catch face on the leg, thus preventing axial movement of the chain cover module relative to the drive spline; and
a quick release actuator located at a second end of the assembly comprising an inner annular abutment surface in contact with the at least one leg.

2. A chain guard housing and clutch assembly as claimed in claim 1 wherein the chain wheel is operable to engage an operating chain.

3. A chain guard housing and clutch assembly as claimed in claim 1 or claim 2 wherein movement of the actuator towards the first end causes the annular abutment surface to move the at least one leg inwards towards a central axis of the assembly, thus disengaging the drive spline from the chain cover module.

4. A chain guard housing and clutch assembly as claimed in any preceding claim wherein the actuator comprises a button and prongs extending towards the first end of the assembly.

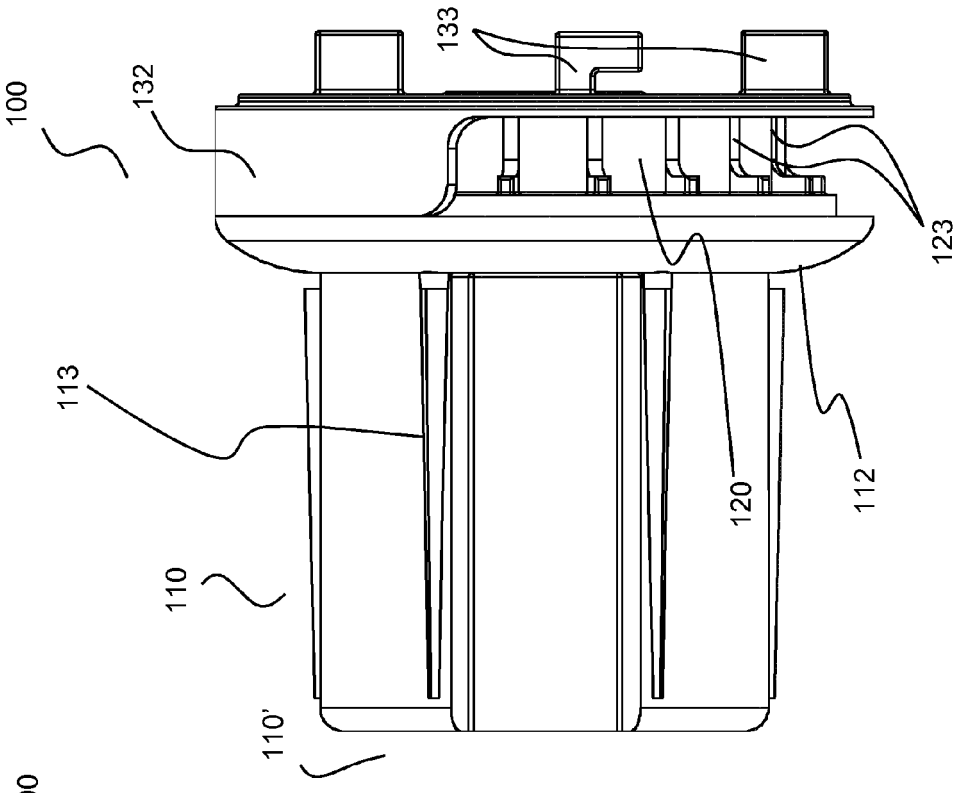
5. A chain guard housing and clutch assembly as claimed in claim 4 wherein the legs of the central pin surround the prongs; and a catch face on the inside of the legs of the central pin abuts a catch face on the outside of the prongs.

6. A chain guard housing and clutch assembly as claimed in any preceding claim wherein the chain cover module comprises one or more protrusions for engaging with a mounting bracket.

7. A chain guard housing and clutch assembly as claimed in any preceding claim wherein the chain cover module comprises a ledge operable to engage with the at least one leg of the drive spline in a first configuration and with the brim of the button in a second configuration.

8. A chain guard housing and clutch assembly as claimed in any preceding claim wherein the chain cover module has a substantially cylindrical body portion which extends substantially through the drive spline, the drive spline and chain wheel being rotatable about the body of the chain cover module.

9. A chain guard housing and clutch assembly as claimed in any preceding claim wherein at least one retention clip is attached to the chain wheel body at the first end.



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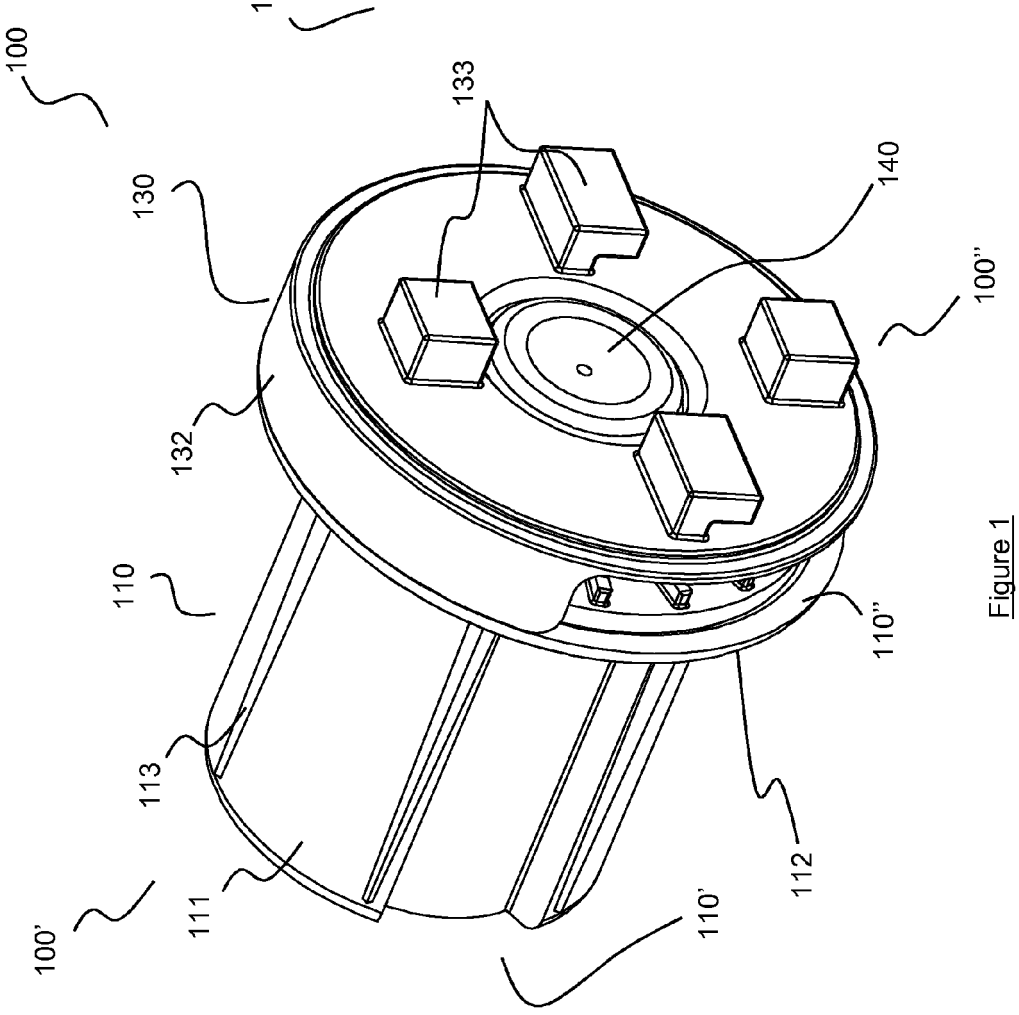
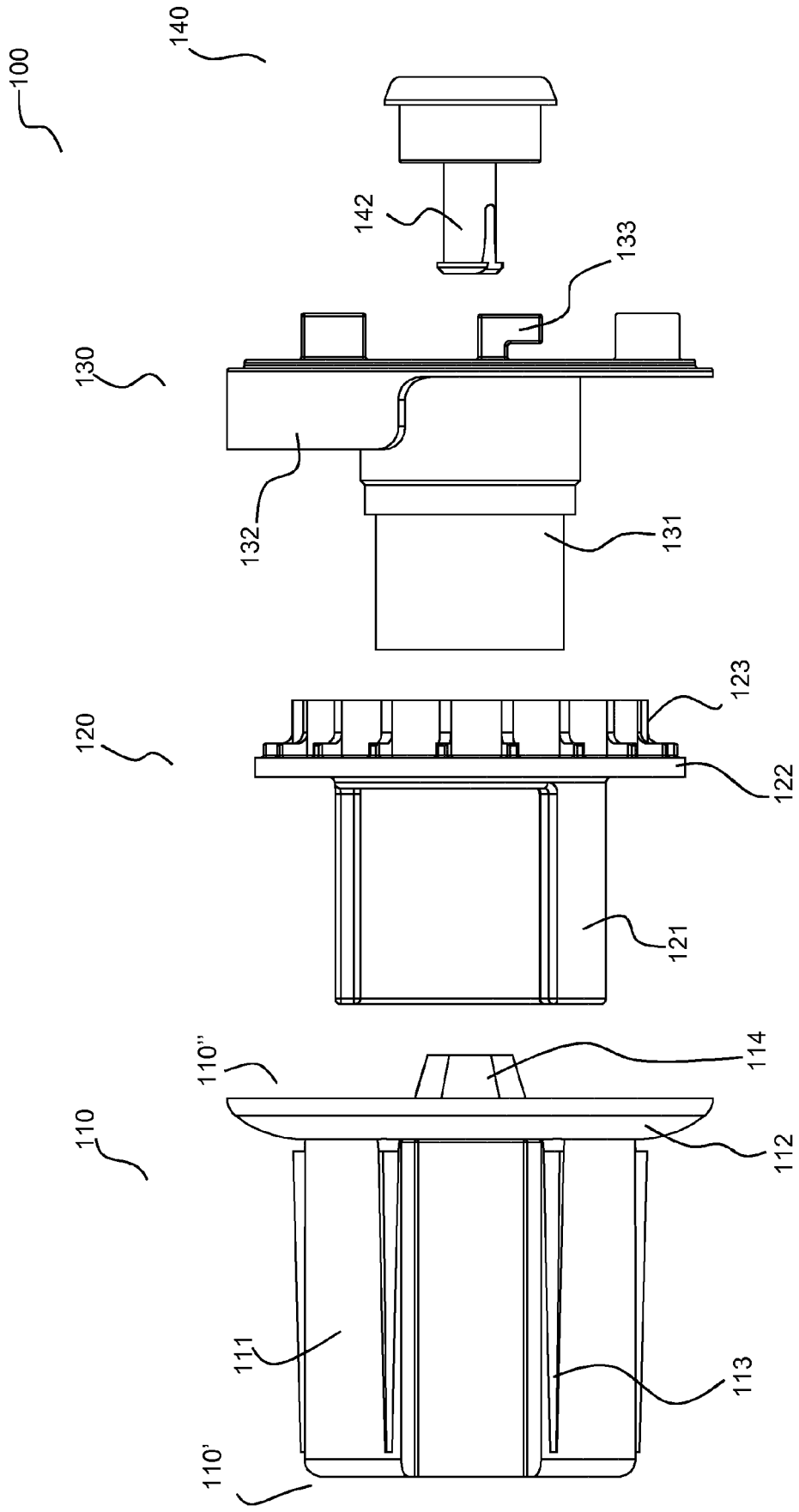


Figure 1


100
140
142
133
130
132
131
120
123
122
121
110''
114
110
112
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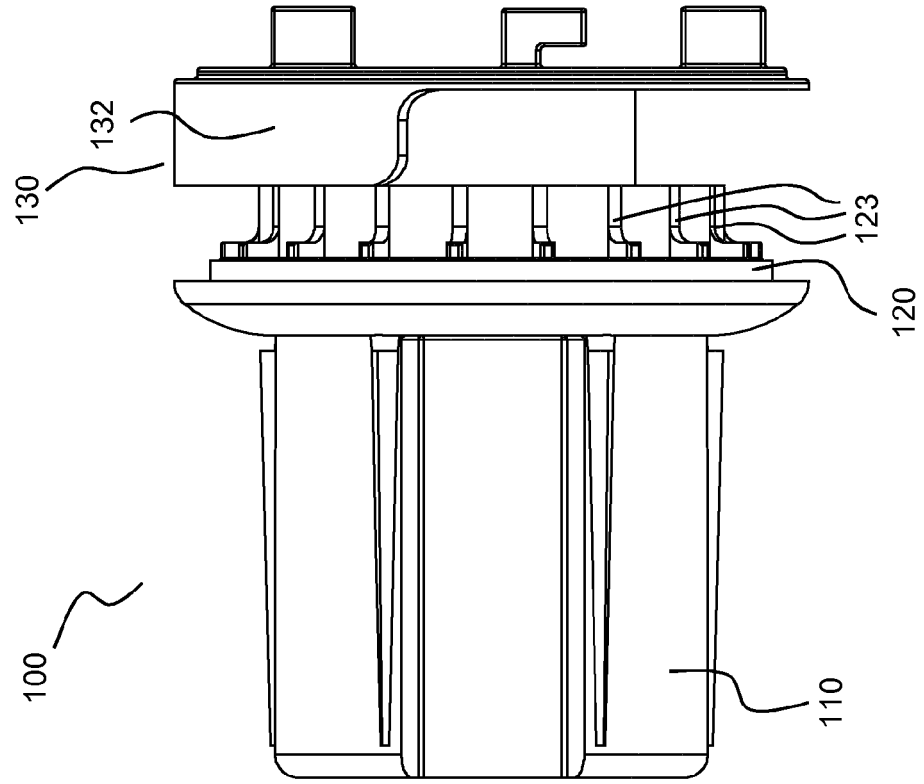
113
110'

Figure 3



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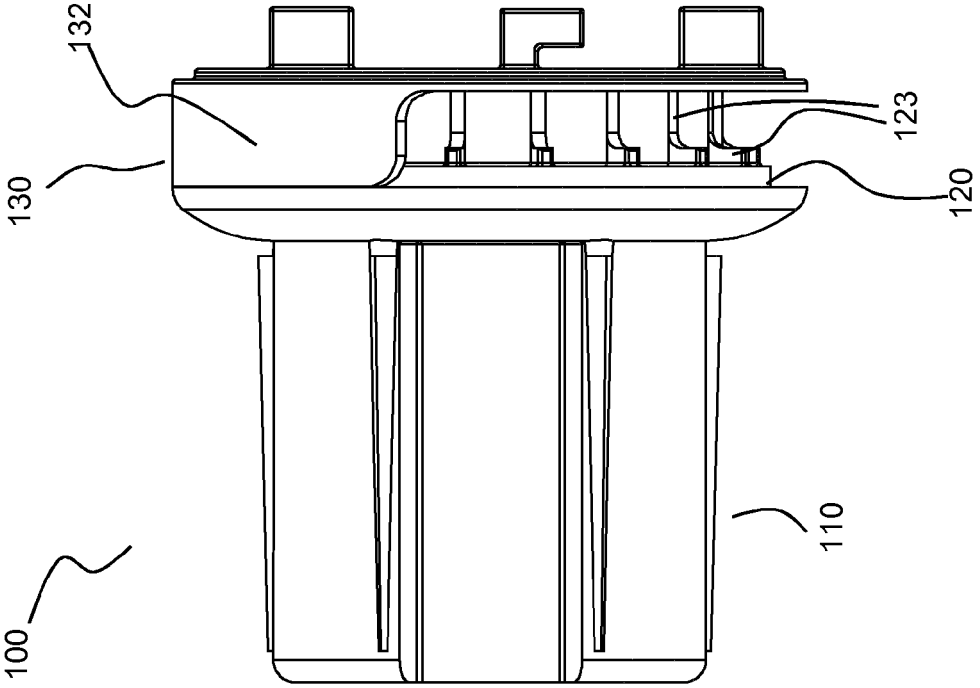

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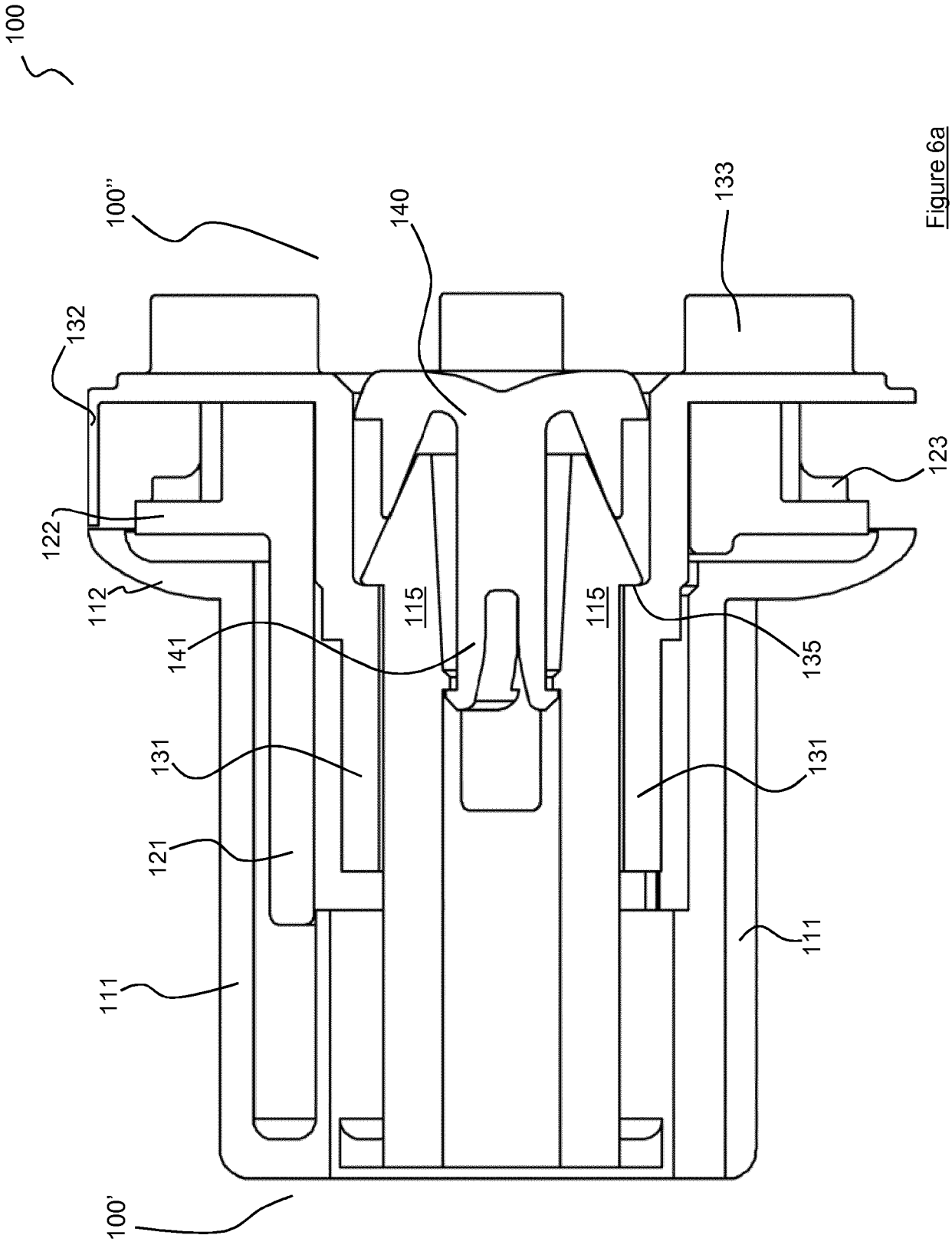
100
100''
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115
115
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135
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131
121
111
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Figure 6a

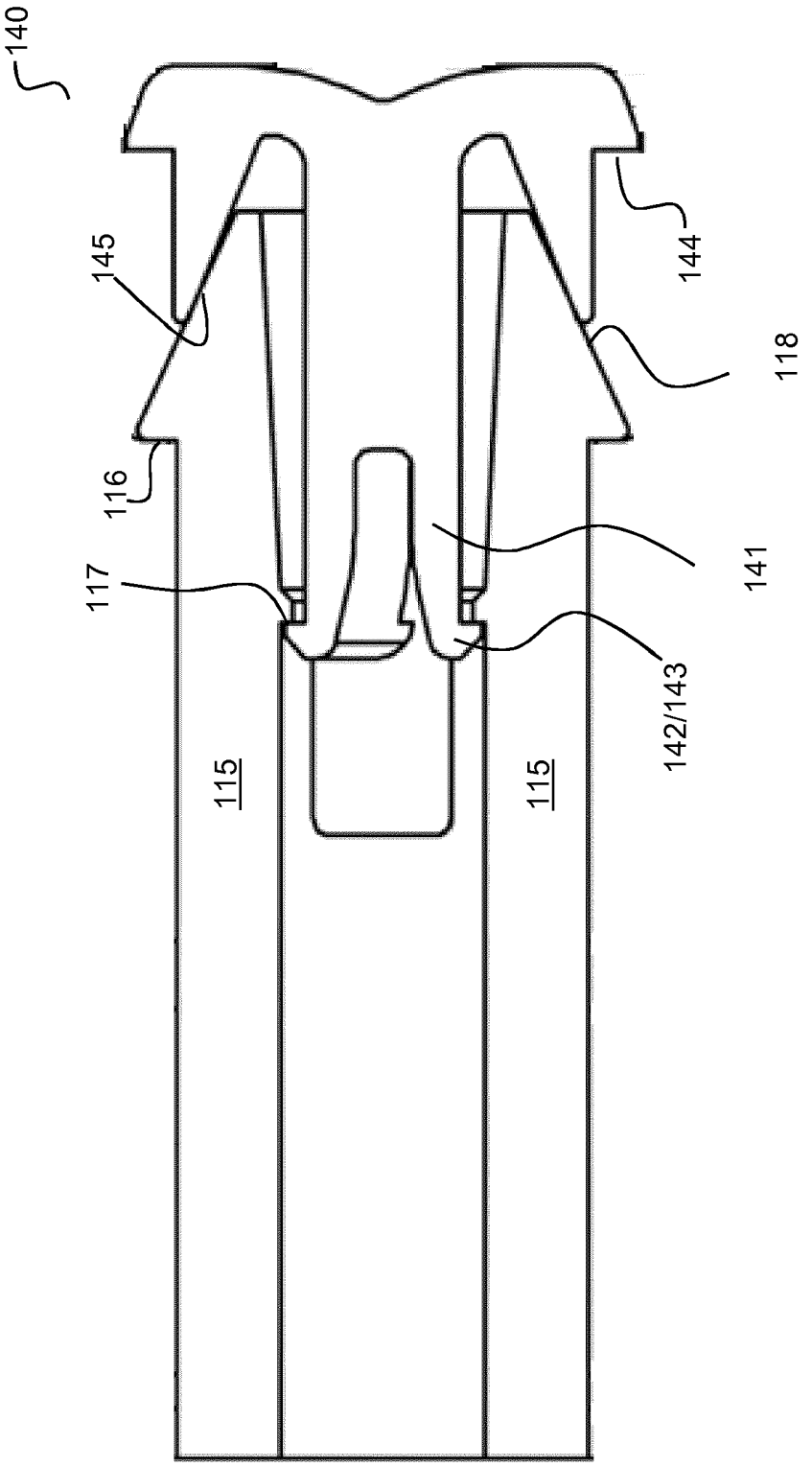


Figure 6b

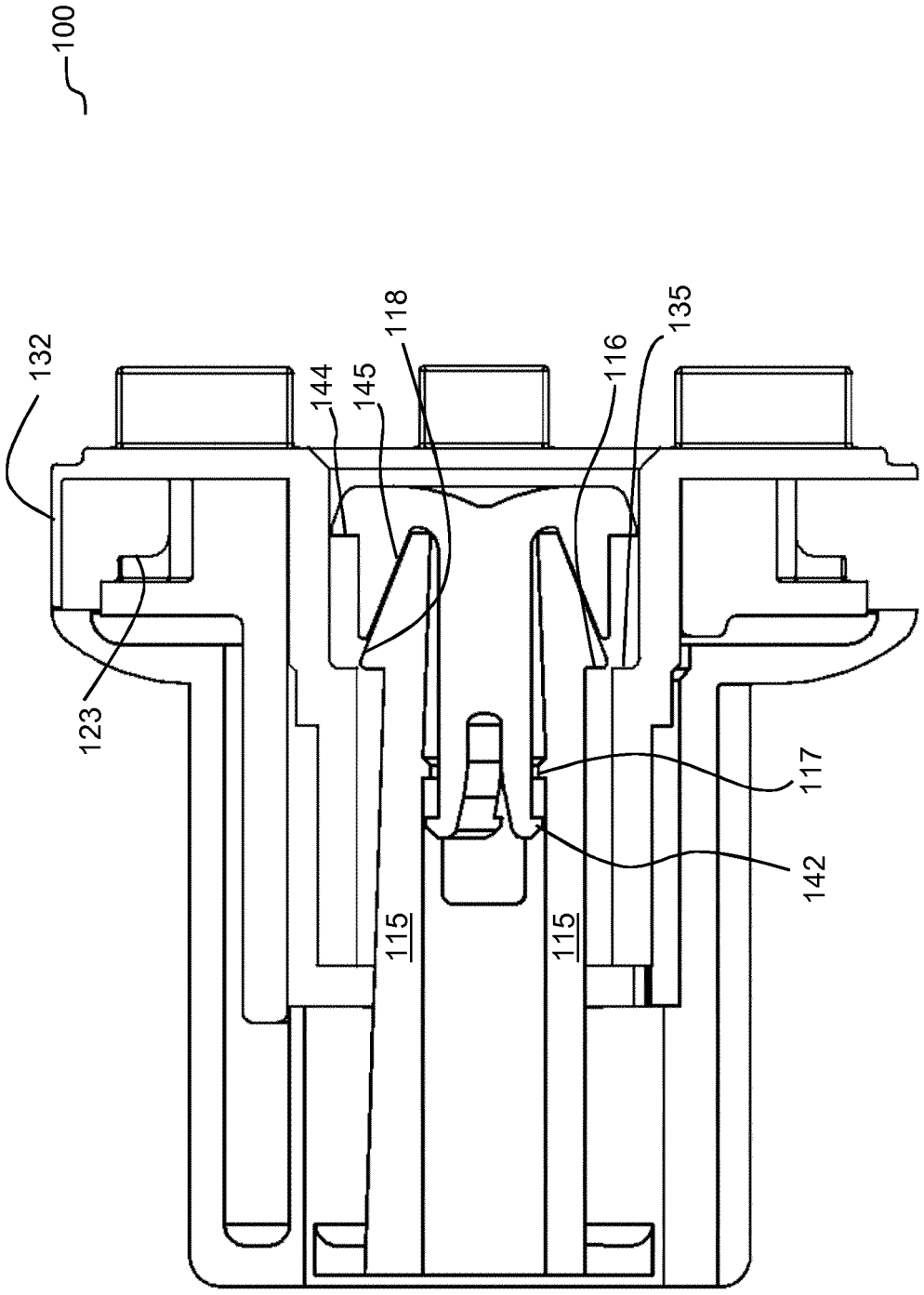


Figure 7a

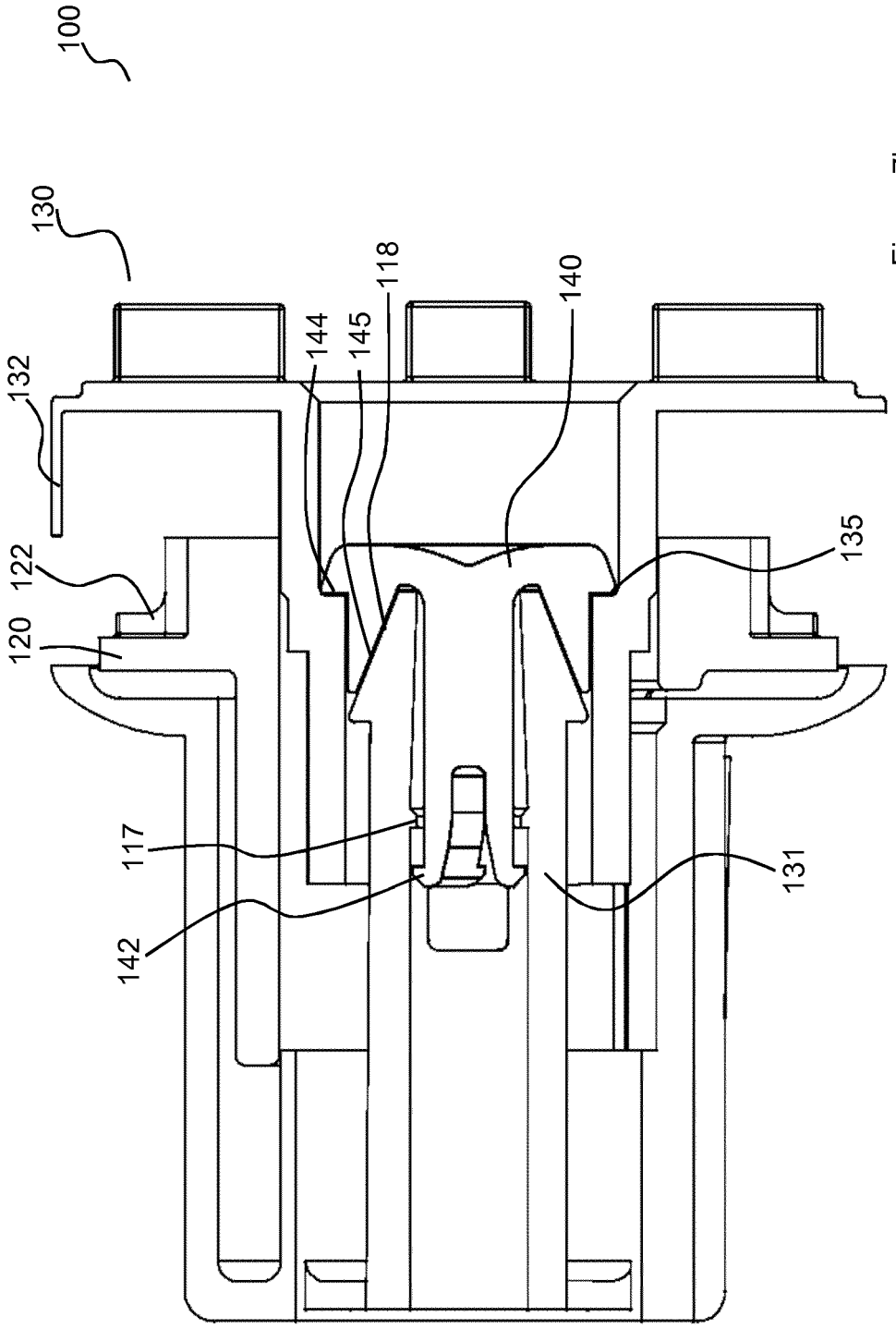
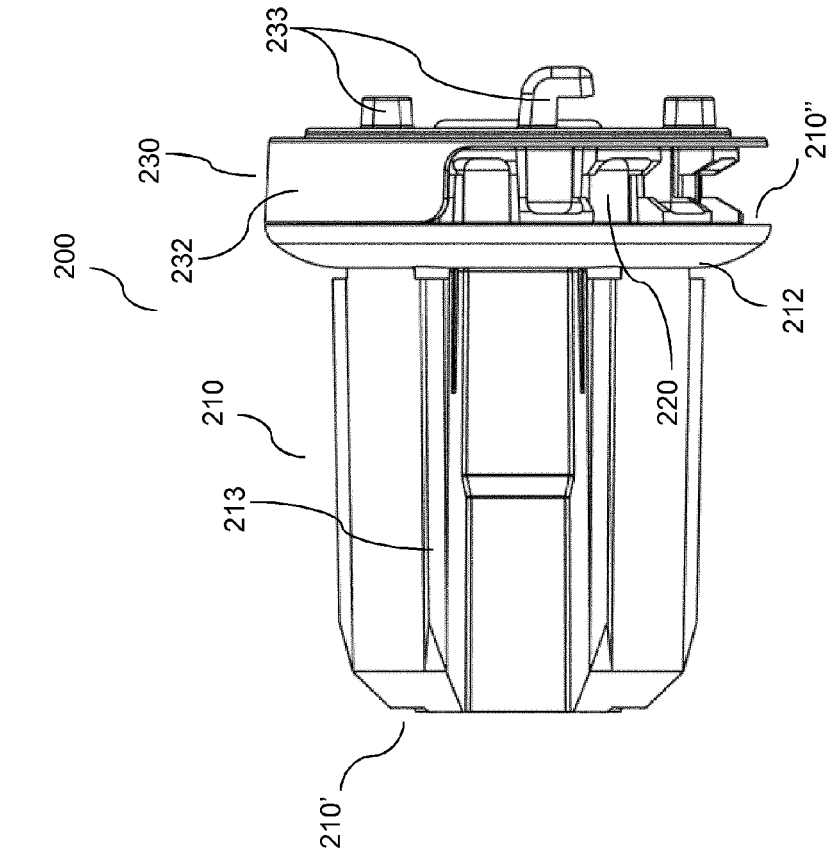


Figure 7b



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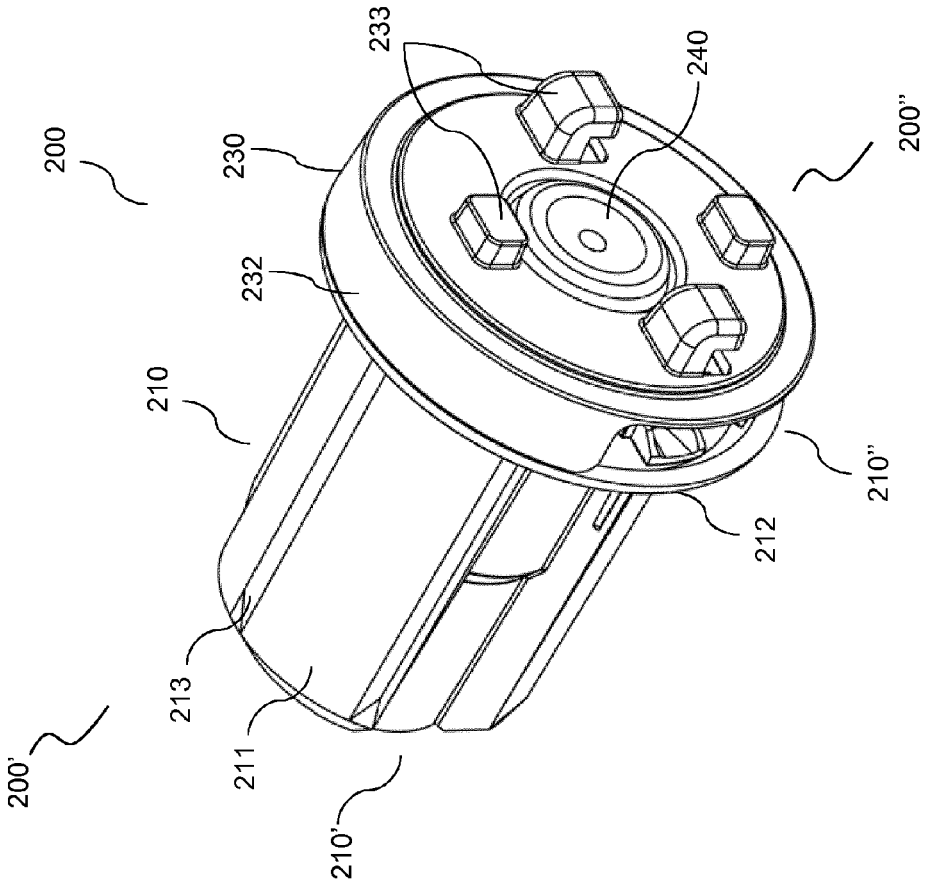

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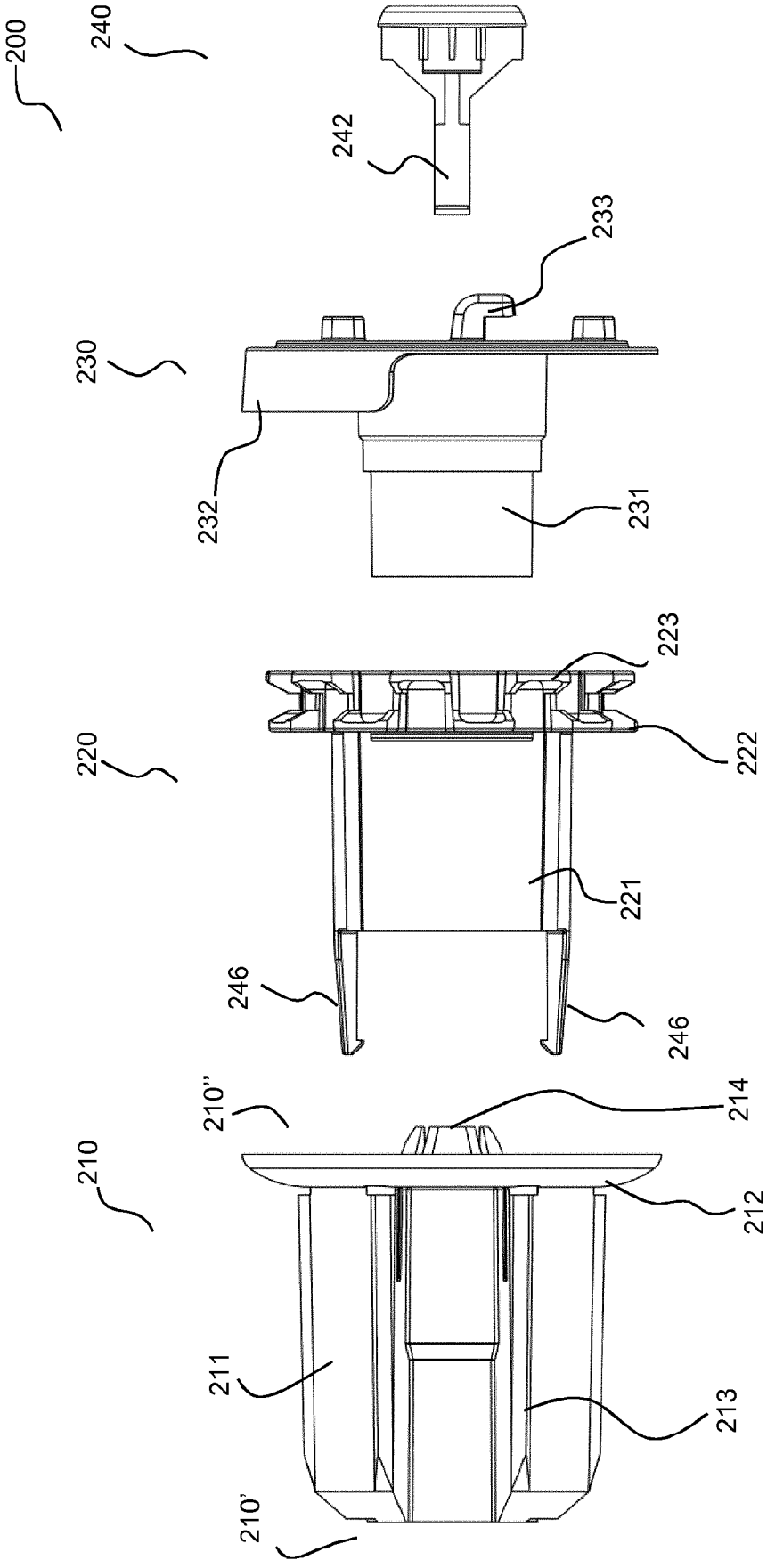
200
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210''
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212
211
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Figure 10

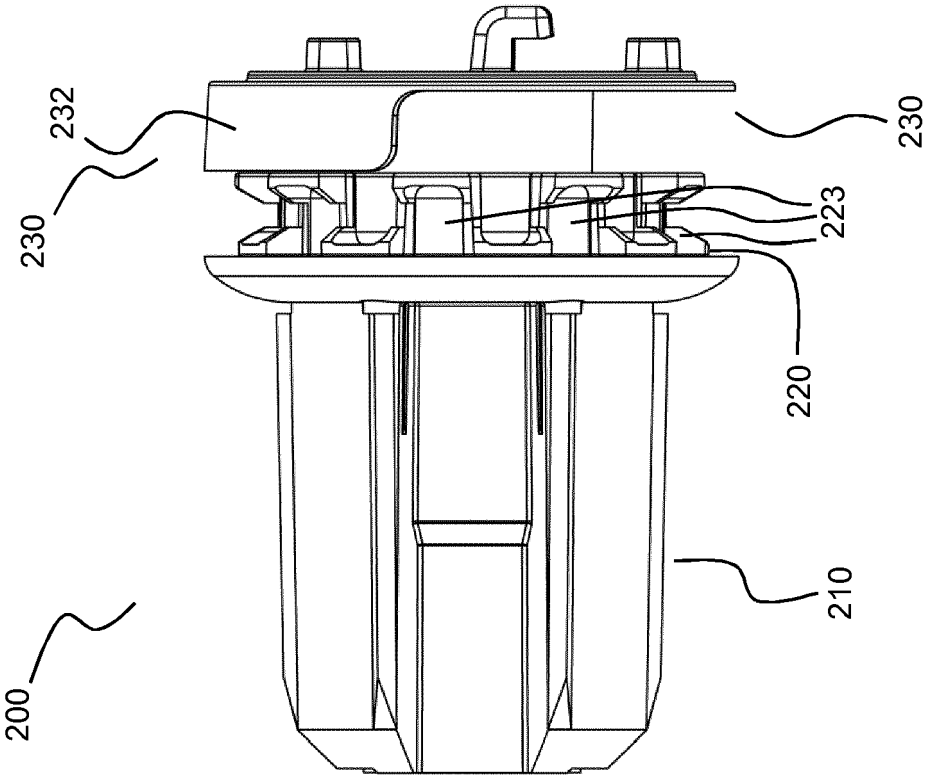

Figure 12

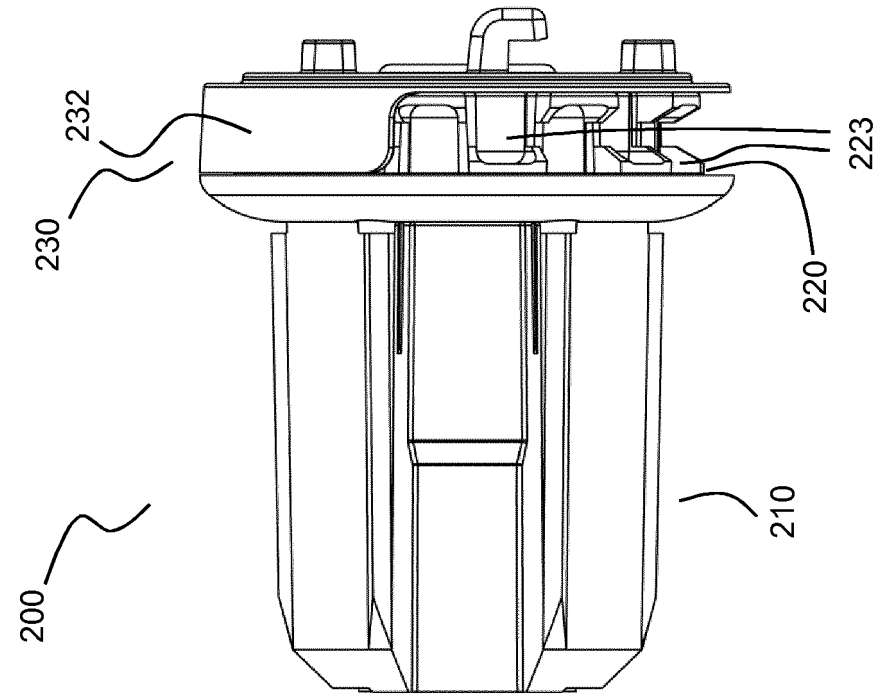

Figure 11

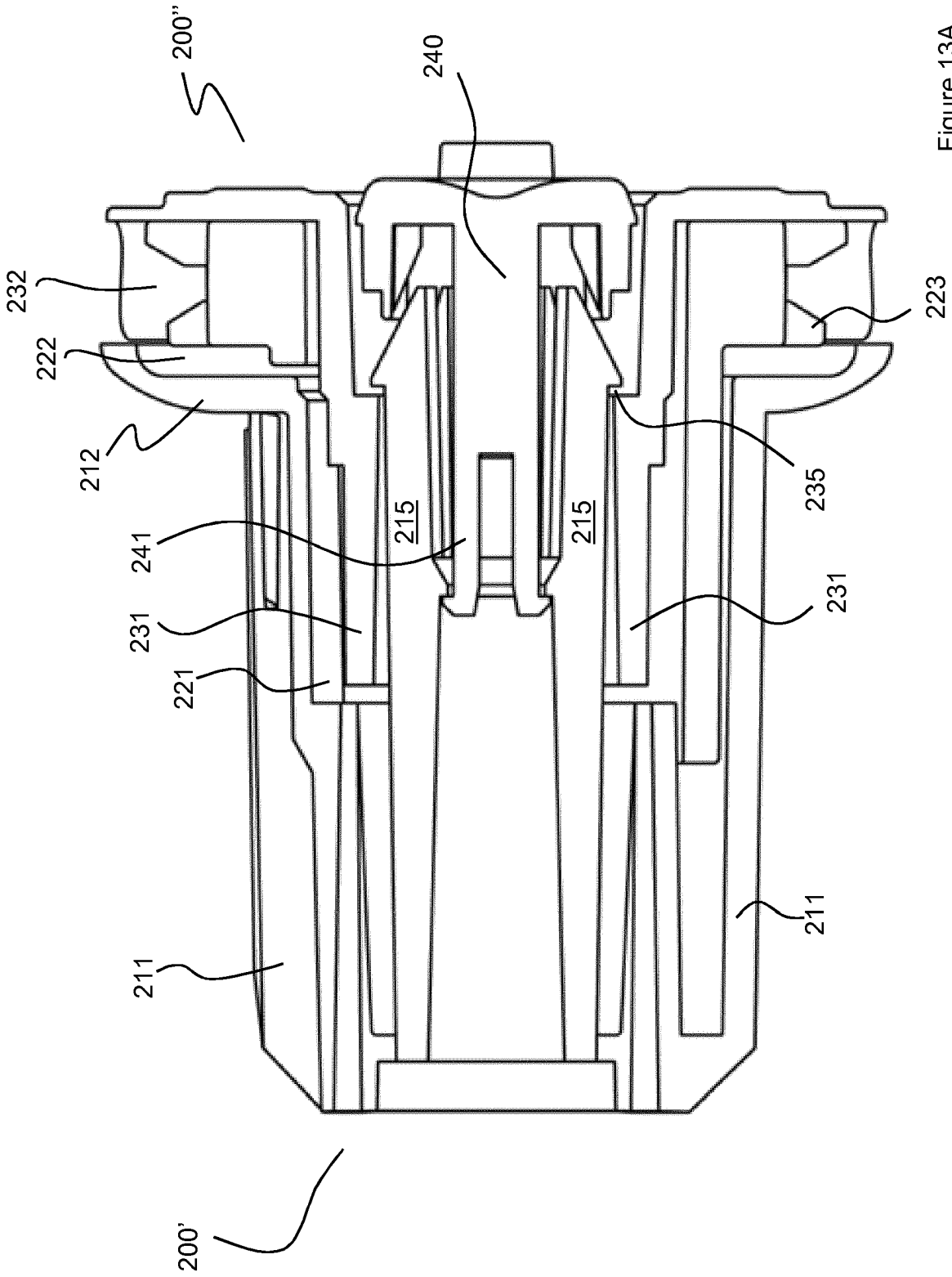

Figure 13A

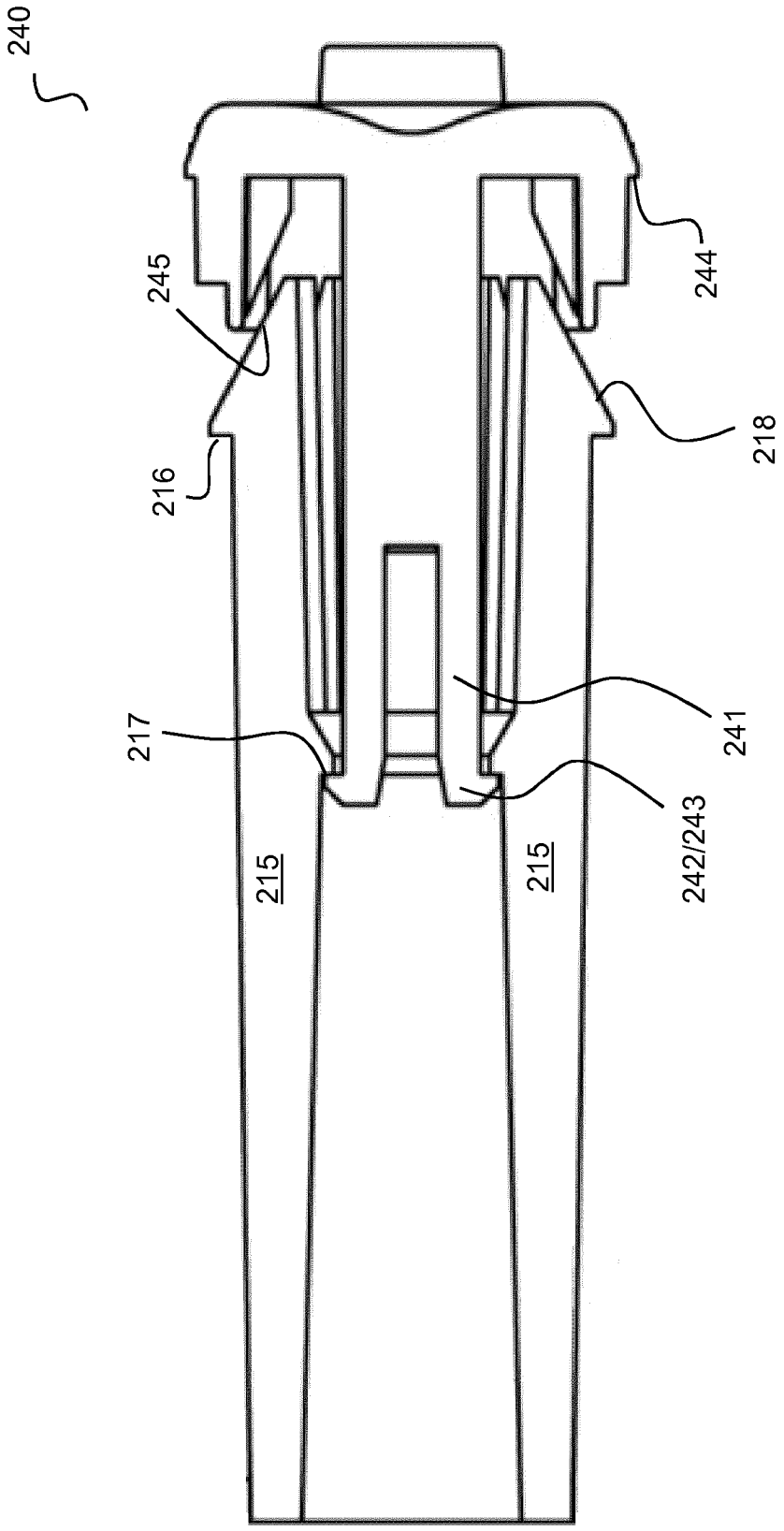

Figure 13b

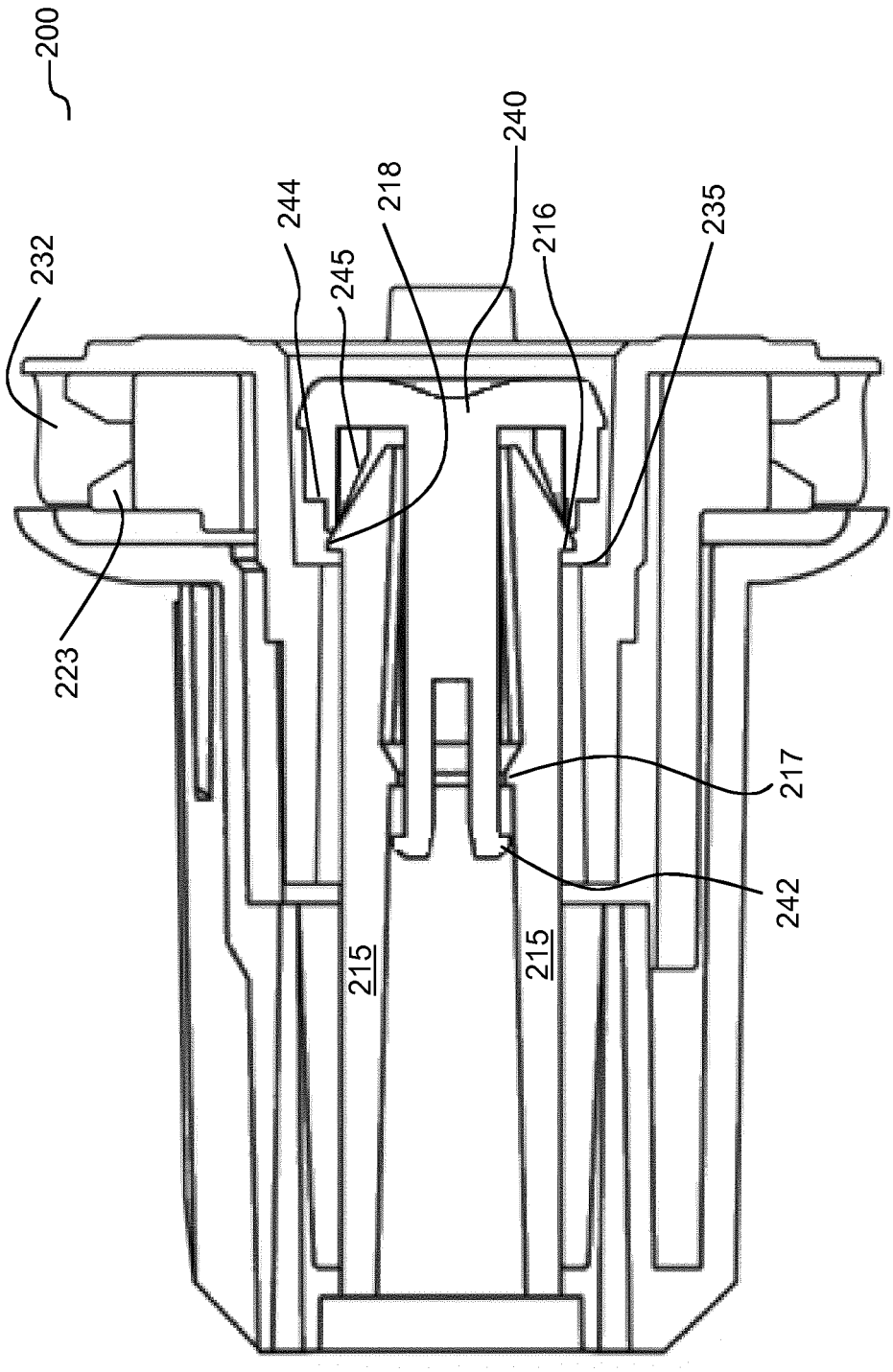

Figure 14a

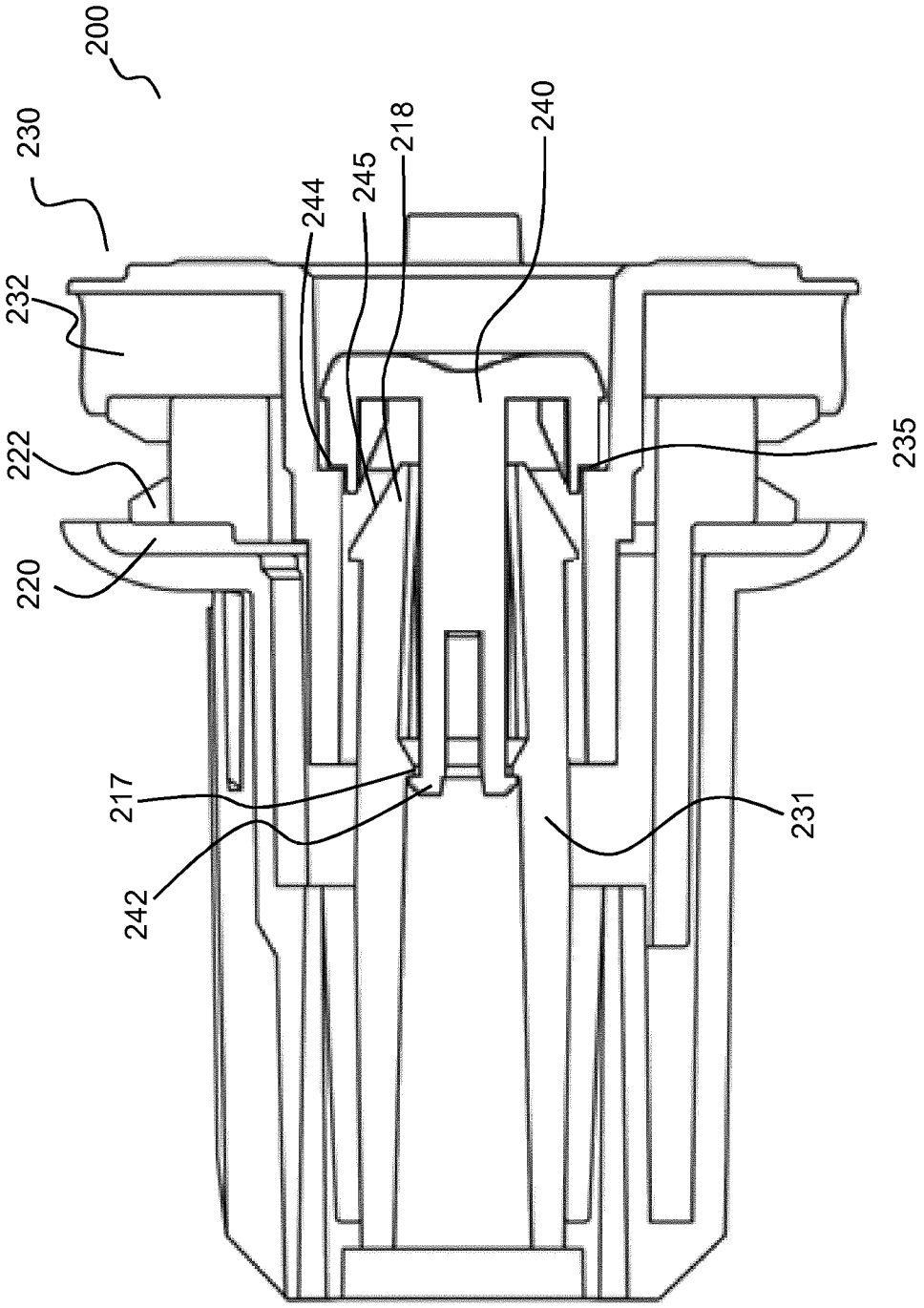

Figure 14b

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EUROPEAN SEARCH REPORT

Application Number
EP 19 15 5075

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	WO 2014/033474 A1 (LOUVER LITE LTD [GB]) 6 March 2014 (2014-03-06) * figures 1-7 *	1-9	INV. E06B9/42 E06B9/50 E06B9/56 E06B9/68
A	US 2007/007100 A1 (ALLSOPP REGINALD C [GB]) 11 January 2007 (2007-01-11) * figures 1-5 *	1-9	
A	US 2007/246173 A1 (LIU FENG-CHIN [TW]) 25 October 2007 (2007-10-25) * figures 1-4 *	1-9	
A	US 8 726 972 B1 (WILLS NORMAN [CA]) 20 May 2014 (2014-05-20) * figures 1-7 *	1-9	

TECHNICAL FIELDS SEARCHED (IPC)
E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	31 May 2019	Merz, Wolfgang

CATEGORY OF CITED DOCUMENTS

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31-05-2019

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