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(54) FASTENING DEVICE FOR RELEASABLE FASTENING OF A SCREEN TO A LEAF

(57) The present invention relates to a fastening device (1) for releasable fastening of a screen, such as a window covering, to a leaf, such as a door or a window. The fastening device is provided with coupling means (30) for coupling to the screen and is further provided with a housing (10) with a first clamping jaw (11) and with a bracket (20) with a second clamping jaw (21). The bracket is movable in the housing between a clamping position, in which the leaf can be clamped between the first and the second clamping jaw, and a releasing position in which the first and the second clamping jaw release the leaf. The fastening device is further provided with an eccentric locking element (14) which is provided with an operating handle (17) and an eccentrically formed contact surface and is arranged rotatably in the housing and locks the bracket in the housing in the clamping position.

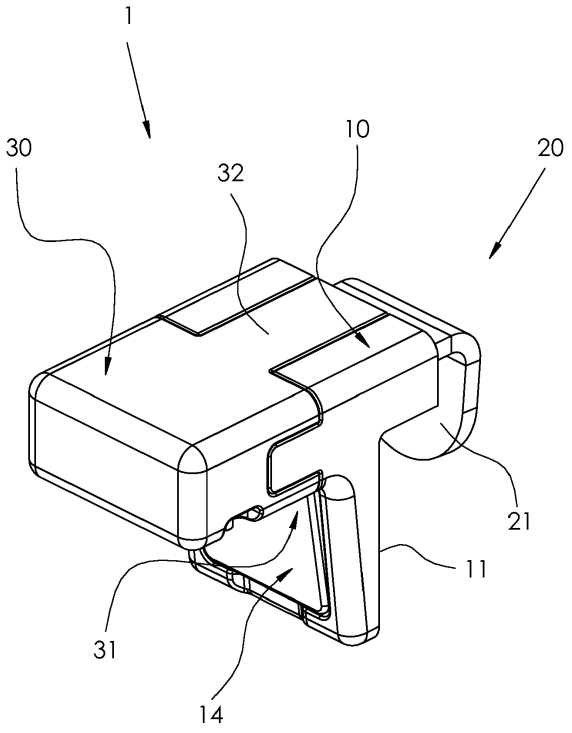

FIG. 2A

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Description

[0001] The present invention relates to a fastening device for releasable fastening of a rail of a screen, such as a window covering, to a leaf, such as a door or a window.

[0002] Such a fastening device is known in different variants in the relevant field for the purpose of releasably fastening a window covering to a leaf without damaging the leaf.

[0003] The known fastening devices are generally provided with a housing with a first clamping jaw and with a bracket with a second clamping jaw, wherein the bracket is movable in the housing between a clamping position, in which the leaf can be clamped between the first and the second clamping jaw, and a releasing position in which the first and second clamping jaw release the leaf, and with coupling means for coupling to the screen.

[0004] The present invention has for its object to provide a fastening device of the type stated in the preamble, which can be operated without tools.

[0005] The fastening device according to the invention is for this purpose further provided with an eccentric locking element which is provided with an operating handle and an eccentrically formed contact surface and is arranged rotatably in the housing, wherein in the clamping position the eccentrically formed contact surface lies against the bracket and locks the bracket in the housing in the clamping position.

[0006] The operating handle makes the eccentric locking element suitable for manual operation without tools. The eccentrically formed contact surface engages on the bracket, whereby the movement from the releasing position to the clamping position can be performed simply, quickly and reliably by means of one operation.

[0007] In a preferred embodiment the eccentric contact surface provides the additional advantage that it further reduces the distance between the first and the second clamping jaw in the clamping position by co-displacing the bracket during rotation, whereby the clamping force of the fastening device on the leaf increases.

[0008] In a further preferred embodiment the bracket is provided with a rough surface for increasing the gripping force of the eccentric locking element.

[0009] According to a further development, the bracket is provided with an insert piece with a rough surface, which insert piece can be fastened releasably to the bracket. The bracket itself is preferably embodied from deformable material, wherein the insert piece is intended for engagement of the eccentrically formed contact surface of the eccentric locking element.

[0010] In a compact preferred embodiment the eccentric locking element has a generally plate-like operating handle which is provided with an eccentric peripheral edge.

[0011] According to a further development, the operating handle of the eccentric locking element rests in the clamping position against the rear side of the first clamping jaw of the housing. This development also contributes further to a compact design.

[0012] In a robust preferred embodiment the fastening device is further provided with a securing element for securing the eccentric locking element in the clamping position. With the securing element the fastening device according to the invention is able to support a greater load and is thereby suitable for application in heavier screens.

[0013] According to a very compact and elegant preferred embodiment, the coupling means comprise the securing element.

[0014] In a first preferred embodiment the coupling means are embodied as mounting cover for the cords of a window covering, which mounting cover can be attached releasably to the housing. In this first preferred embodiment the fastening device is suitable for fastening a screen with tensioning cords, such as a pleated blind, to a leaf.

[0015] The mounting cover is preferably further provided with a snap lock for co-action with the first guide piece. The snap lock increases the convenience of use.

[0016] In a second preferred embodiment the coupling means are embodied as mounting support for the shaft of a window covering, which mounting support can be attached releasably to the housing. In the second preferred embodiment the fastening device is suitable for fastening a screen with a shaft, such as a roller blind, to a leaf.

[0017] The mounting support is preferably further provided with a snap lock for co-action with the first clamping jaw.

[0018] In a third preferred embodiment the coupling means are embodied as mounting clamp for the rail of a window covering, which mounting clamp can be attached releasably to the housing.

[0019] According to a practical preferred embodiment, the housing comprises a first guide piece which is positioned at a first angle α to the first clamping jaw.

[0020] According to a further practical preferred embodiment, the bracket comprises a second guide piece which is positioned at a second angle β to the second clamping jaw.

[0021] In a further development of the two practical preferred embodiments the housing is provided with a passage for receiving the second guide piece, which passage is arranged between the first guide piece and the first clamping jaw. This results in an extremely compact design.

[0022] According to yet another development, a rotation axis of the locking element is positioned close to the passage and in the clamping position the eccentrically formed contact surface extends at least partially into the passage. This development contributes further to a compact design.

[0023] The housing is preferably generally T-shaped and the bracket generally L-shaped.

[0024] The bracket preferably comprises metal, pref-

erably spring steel.

[0025] The housing preferably comprises plastic.

[0026] The invention will now be described in more detail with reference to the figures, in which

Figure 1 shows a schematic view of a screen with a first preferred embodiment of the fastening device according to the invention with exploded parts;
Figure 2A shows the fastening device of figure 1 in more detail in assembled state;
Figure 2B shows a schematic view of a part of the fastening device of figure 2A in more detail;
Figure 3A shows a cross-sectional view of the fastening device of figure 2B in a releasing position;
Figure 3B shows a cross-sectional view of the fastening device of figure 2B in a clamping position;
Figure 4A shows a schematic view of a second preferred embodiment of the fastening device according to the invention with exploded parts;
Figure 4B shows a schematic view of the fastening device of figure 4A in assembled state;
Figure 5A shows a cross-sectional view of a third embodiment of the fastening device according to the invention in a releasing position;
Figure 5B shows a cross-sectional view of the fastening device of figure 5A in a clamping position;
Figure 5C shows a schematic bottom view of a part of the fastening device of figure 5B; and
Figure 5D shows a schematic bottom view of a part of the fastening device of figure 5A.
Figure 5E shows a schematic top view of a part of the fastening device of figure 5A.

[0027] The same reference numerals designate the same components in the different figures.

[0028] Figure 1 shows a schematic view of a first preferred embodiment of the fastening device according to the invention fastened to a window covering with exploded parts.

[0029] Fastening device 1 is intended for fastening a screen 300, such as a window covering, releasably and clampingly round a leaf 400. Such a fastening device is also referred to as clamp bracket. In the first preferred embodiment fastening device 1 is provided with coupling means 30 for co-action with the cords 302 of the window covering, this being a pleated blind 300 in figure 1.

[0030] Of the leaf 400, only the upper side is shown schematically. Examples of a leaf any movable window, such as a casement window, a tilting window or a tilt and turn window, or a door. A leaf is generally provided with a (window) pane.

[0031] Figure 2A shows the fastening device 1 in more detail in assembled state. Figure 2B shows a schematic view of a part of the fastening device of figure 2A in more detail.

[0032] Figure 3A shows a cross-sectional view of fastening device 1 in a releasing position and figure 3B shows a cross-sectional view of fastening device 1 in a clamping position.

[0033] Fastening device 1 is provided with a housing 10 with a first clamping jaw 11 and with a bracket 20 with a second clamping jaw 21. First clamping jaw 11 is configured to lie against a side of leaf 400 and second clamping jaw 21 is configured to lie against the other side of leaf 400, wherein fastening device 1 bridges the upper side of leaf 400.

[0034] Housing 10 comprises a first guide piece 12 which is positioned at an angle α to the first clamping jaw 11 and is provided with a passage 13. The angle α is substantially 90 degrees. In the shown preferred embodiment housing 10 is generally T-shaped.

[0035] Bracket 20 comprises a second guide piece 22 which is positioned at an angle β to the second clamping jaw 21. The angle β is generally smaller than 90 degrees. In the shown preferred embodiment bracket 20 is generally L-shaped.

[0036] In the assembled state of fastening device 1 the second guide piece 22 is received movably in passage 13. Guide pieces 12 and 22 protrude substantially in the same direction.

[0037] Housing 10 is further provided with a locking element 14 which is arranged in the housing for rotation about a rotation axis 15 which is positioned close to passage 13. Locking element 14 has around rotation axis 15 an eccentrically formed contact surface 16 which lies against the underside of the second guide piece 22 when this is received in passage 13.

[0038] Locking element 14 is provided with an operating handle 17 for manual operation. In the shown preferred embodiment operating handle 17 is generally plate-like, with an eccentrically formed edge 16. The locking element 14 can also be referred to as clamping plate or eccentric lever.

[0039] In the clamping position the eccentric locking element 14 clamps second guide piece 22 against first guide piece 12. In the releasing position locking element 14 exerts no clamping force or pressure on second guide piece 22 and releases the movement of second guide piece 22 in passage 13. The movement of clamping plate 14 is such that second clamping jaw 21 moves toward first clamping jaw 11 (in the direction of arrow A) when clamping plate 14 moves from the releasing position in figure 3A to the clamping position in figure 3B. In the clamping position operating handle 17 rests against the rear side of first clamping jaw 11 of housing 10.

[0040] Optionally arranged in first clamping jaw 11 is a recess 11A for receiving an additional object, for instance tape, in order to prevent displacement of housing 10 relative to leaf 400. The child safety standards which are in effect in the field, such as EN 13120_2009+A1_2014, can hereby be met.

[0041] Fastening device 1 is further provided with a securing element 30 for securing eccentric locking element 14 in the clamping position. Securing element 30 is configured to co-act with housing 10 for the purpose of bounding the rotating movement of eccentric locking

element 14. In the first preferred embodiment securing element 30 is embodied as mounting cover which can be attached releasably to housing 10. Mounting cover 30 is provided with a number of projections 31 which lie against locking element 14, preferably under rotation axis 15, in the assembled state. Mounting cover 30 is further provided with a snap lock formed by tongue 32 with hook 33 for co-action with first guide piece 12. In the first preferred embodiment the first guide piece 12 comprises for this purpose a ridge 12A.

[0042] Fastening device 1 is provided with coupling means 30 for coupling to screen 300. In the first preferred embodiment the coupling means comprise passages 34 for the tensioning cords 302.

[0043] Figure 4A shows a schematic view of a second preferred embodiment of the fastening device according to the invention with exploded parts. Figure 4B shows a schematic view of the fastening device of figure 4A in assembled state.

[0044] Fastening device 101 has a housing 110 which is configured to co-act with a mounting support 130 for the shaft of a window covering, such as a roller blind (not shown). Mounting support 130 can be attached releasably to housing 110 by means of a snap lock for co-action with the first clamping jaw. Housing 110 is provided with protrusions 118 and a hook 119 for co-action with a wall 131 of mounting support 130.

[0045] The mounting support forms a securing element for securing the eccentric locking element 114 in the clamping position. In the assembled state the wall 131 lies against locking element 114 and blocks the rotating movement of the eccentric locking element 114. Operating handle 117 of eccentric locking element 114 is provided with an opening 117A for passage of hook 119. The reference numerals of the other elements of housing 110 are increased by the number 100 relative to the reference numerals of corresponding elements in the first preferred embodiment.

[0046] Fastening device 101 further comprises a bracket 20 as described as part of the first preferred embodiment.

[0047] The invention is based on the concept of clamping the bracket in the housing by means of an eccentric lever. The eccentric is preferably manufactured from plastic. The bracket is preferably manufactured from a deformable material, for instance metal, such as spring steel. The bracket is more preferably provided with a rough contact surface for increasing the gripping force.

[0048] Figure 5A shows a cross-sectional view of a third preferred embodiment of the fastening device 201 according to the invention in a releasing position. Figure 5B shows a cross-sectional view of fastening device 201 in a clamping position. Figure 5C shows a schematic bottom view of fastening device 201 in the clamping position and figure 5D shows a schematic bottom view of fastening device 201 in the releasing position. Figure 5E shows a schematic top view of a part of the fastening device of figure 5A.

[0049] In figures 5C, 5D and 5E the locking element has been omitted for the sake of clarity.

[0050] Fastening device 201 is distinguished relative to the first and second preferred embodiment in respect of the bracket and the housing. The reference numerals are increased by the number 200 relative to the reference numerals of the first preferred embodiment.

[0051] Fastening device 201 has a housing 210 which is configured for co-action with a mounting cover 230 for the cords of a window covering, such as a pleated blind (not shown).

[0052] Mounting cover 230 forms a securing element for securing the eccentric locking element 214 in the clamping position. In the assembled state a flat side 231 of mounting cover 230 lies against locking element 214 and blocks the rotating movement of eccentric locking element 214.

[0053] In the third preferred embodiment bracket 220 is provided with an insert piece 223 with a rough surface. This increases the gripping force exerted by the eccentrically formed contact surface 216 of locking element 214 on bracket 220. Insert piece 223 is preferably manufactured from plastic.

[0054] In the shown preferred embodiment the eccentrically formed contact surface 216 likewise takes an at least partially rough form, this increasing the gripping force still further.

[0055] Insert piece 223 can preferably be attached releasably, for instance by means of a snap connection, to second guide piece 222. The snap connection comprises for instance a number of cylindrical recesses 225 in guide piece 222 of bracket 220 for the purpose of receiving correspondingly formed protrusions (not shown) on insert piece 223.

[0056] Insert piece 223 is further provided with one or more protruding portions 224 which in the extreme position of bracket 220 come to lie against one or more stops 240 on the first guide piece 212 of housing 210. After assembly of insert piece 223 bracket 220 can no longer be released from housing 210, this simplifying the installation of fastening device 201.

[0057] For the sake of completeness it is noted that bracket 220 is also suitable for application in respective housings 10 and 110 of respectively the first and second preferred embodiment.

[0058] In all shown and described preferred embodiments the securing element is integrated into the coupling means. The coupling means can be adapted to diverse types of window covering. The coupling means can for instance alternatively be embodied as mounting clamp for the rail of a window covering, such as a blind. The combination of the coupling means and the locking element therefore functions as an adapter.

[0059] The invention is of course not limited to the described and shown preferred embodiments but extends therefore to any embodiment falling within the scope of protection as defined in the claims and as seen in the light of the foregoing description and accompanying

drawings.

Claims

1. Fastening device (1; 101; 201) for releasable fastening of a screen (300), such as a window covering, to a leaf (400), such as a door or a window, wherein the fastening device is provided with coupling means (30; 130; 230) for coupling to the screen, wherein the fastening device is further provided with a housing (10; 110; 210) with a first clamping jaw (11; 111; 211) and with a bracket (20; 220) with a second clamping jaw (21; 221), wherein the bracket is movable in the housing between a clamping position, in which the leaf can be clamped between the first and the second clamping jaw, and a releasing position in which the first and the second clamping jaw release the leaf, wherein the fastening device is further provided with an eccentric locking element (14; 114; 214) which is provided with an operating handle (17; 117; 217) and an eccentrically formed contact surface (16; 116; 216) and is arranged rotatably in the housing, wherein in the clamping position the eccentrically formed contact surface (16; 116; 216) lies against the bracket (20; 220) and locks the bracket in the housing in the clamping position.

2. Fastening device as claimed in claim 1, wherein the eccentric contact surface (16; 116; 216) co-displaces the bracket (20; 220) during rotation of the eccentric locking element (14; 114; 214) to the clamping position in order to further reduce the distance between the first clamping jaw (11; 111; 211) and the second clamping jaw (21; 221) in the clamping position.

3. Fastening device as claimed in claim 1 or 2, wherein the bracket (20; 220) is provided with a rough contact surface for increasing the gripping force of the eccentric locking element to (14; 114; 214).

4. Fastening device as claimed in claim 3, wherein the bracket (220) is provided with an insert piece (223) with a rough surface, which insert piece can be attached releasably to the bracket.

5. Fastening device as claimed in any one of the foregoing claims, wherein the operating handle (17; 117; 217) of the eccentric locking element (14; 114; 214) is generally plate-like and is provided with an eccentric peripheral edge (16; 116; 216).

6. Fastening device as claimed in claim 5, wherein the operating handle (17; 117; 217) of the eccentric locking element (14; 114; 214) rests in the clamping position against the rear side of the first clamping jaw (11; 111; 211) of the housing (10; 110; 210).

7. Fastening device as claimed in any one of the foregoing claims, wherein the fastening device is further provided with a securing element (30; 130; 230) for securing the eccentric locking element (14; 114) in the clamping position.

8. Fastening device as claimed in claim 7, wherein the coupling means (30; 130; 230) comprise the securing element.

9. Fastening device as claimed in any one of the foregoing claims, wherein the coupling means (30; 230) are embodied as mounting cover for the cords (302) of a window covering (300), which mounting cover can be attached releasably to the housing (10; 210).

10. Fastening device as claimed in any one of the foregoing claims, wherein the coupling means (130) are embodied as mounting support for the shaft of a window covering, which mounting support can be attached releasably to the housing (110).

11. Fastening device as claimed in any one of the foregoing claims, wherein the coupling means are embodied as mounting clamp for the rail of a window covering, which mounting clamp can be attached releasably to the housing.

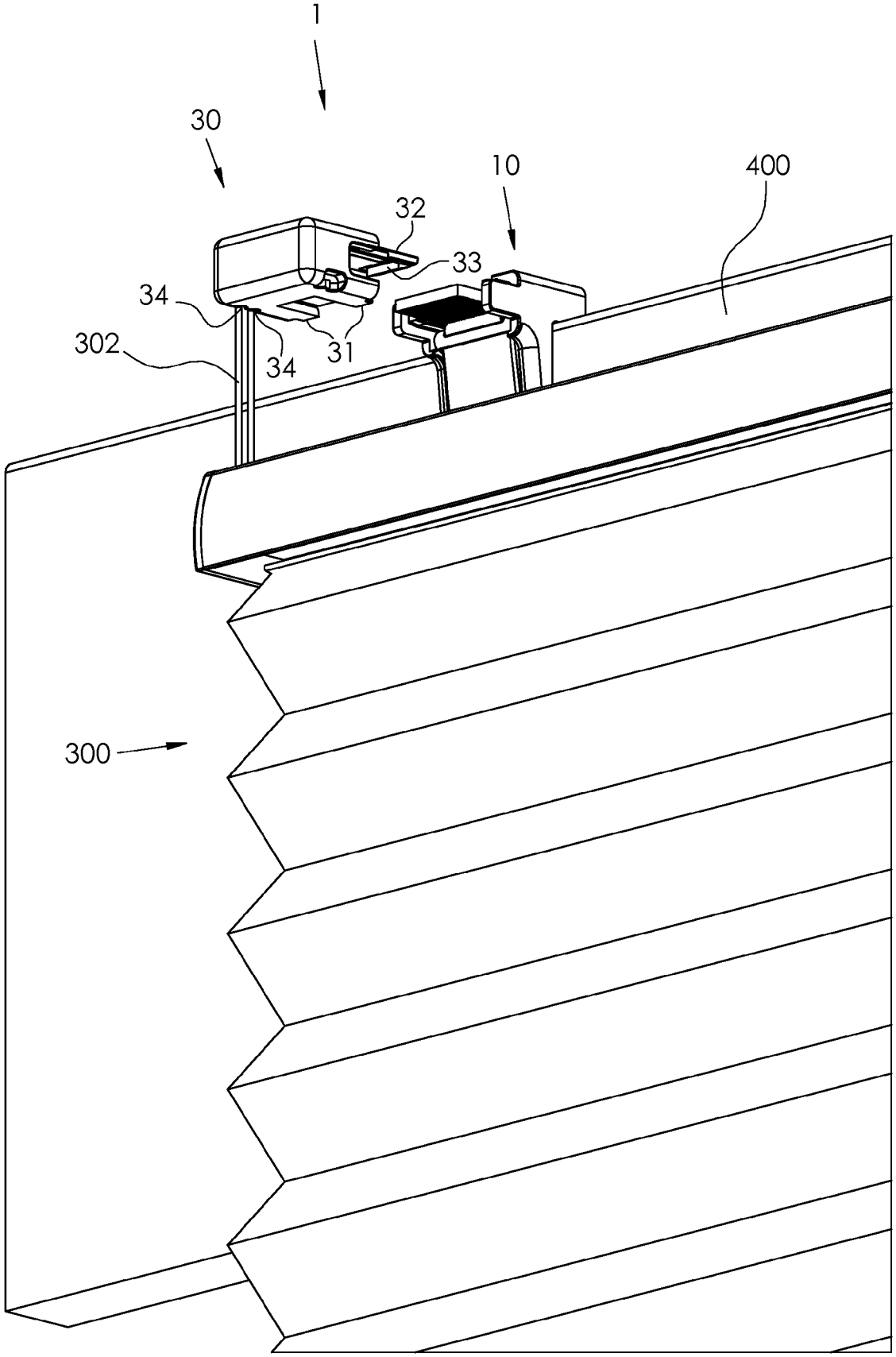
12. Fastening device as claimed in any one of the foregoing claims, wherein the housing (10; 110; 210) comprises a first guide piece (12; 112; 212) which is positioned at an angle α to the first clamping jaw (11; 111; 211) and wherein the bracket (20; 220) comprises a second guide piece (22; 222) which is positioned at an angle β to the second clamping jaw (21; 221)

13. Fastening device as claimed in claim 12, wherein the housing (10; 110; 210) is provided with a passage (13; 113; 213) for receiving the second guide piece (22; 222), which passage is arranged between the first guide piece (12; 112; 212) and the first clamping jaw (11; 111; 211).

14. Fastening device as claimed in claim 13, wherein a rotation axis (15; 115; 215) of the locking element (14; 114; 214) is arranged close to the passage (13; 113; 213) and in the clamping position the eccentrically formed contact surface (16; 116; 216) extends at least partially into the passage.

15. Fastening device as claimed in any one of the foregoing claims, wherein the bracket (20; 220) comprises metal, preferably spring steel.

FIG. 1



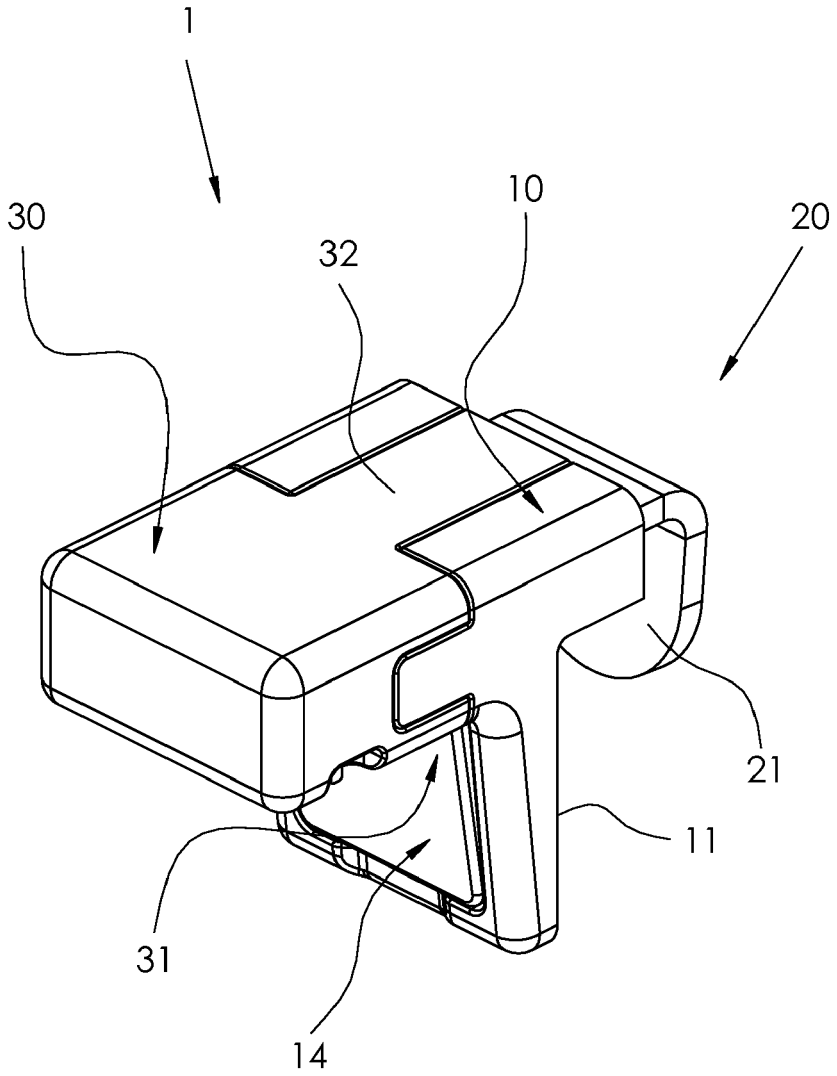


FIG. 2A

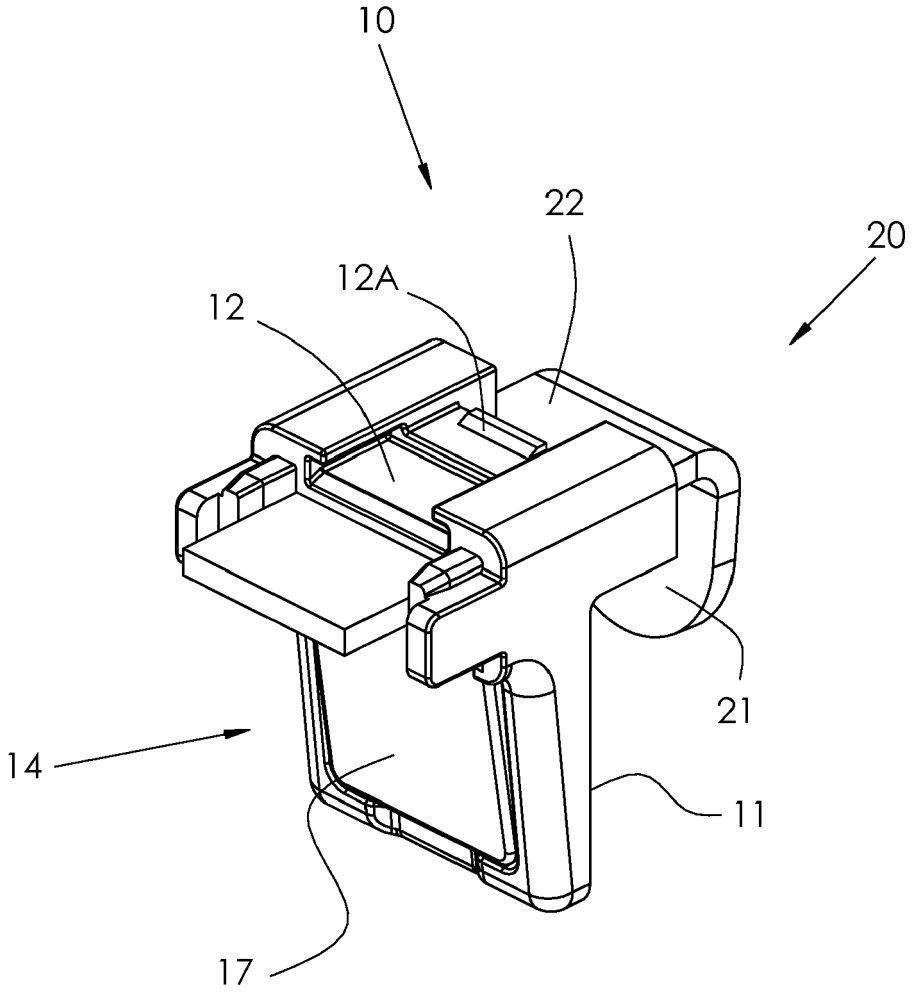


FIG. 2B

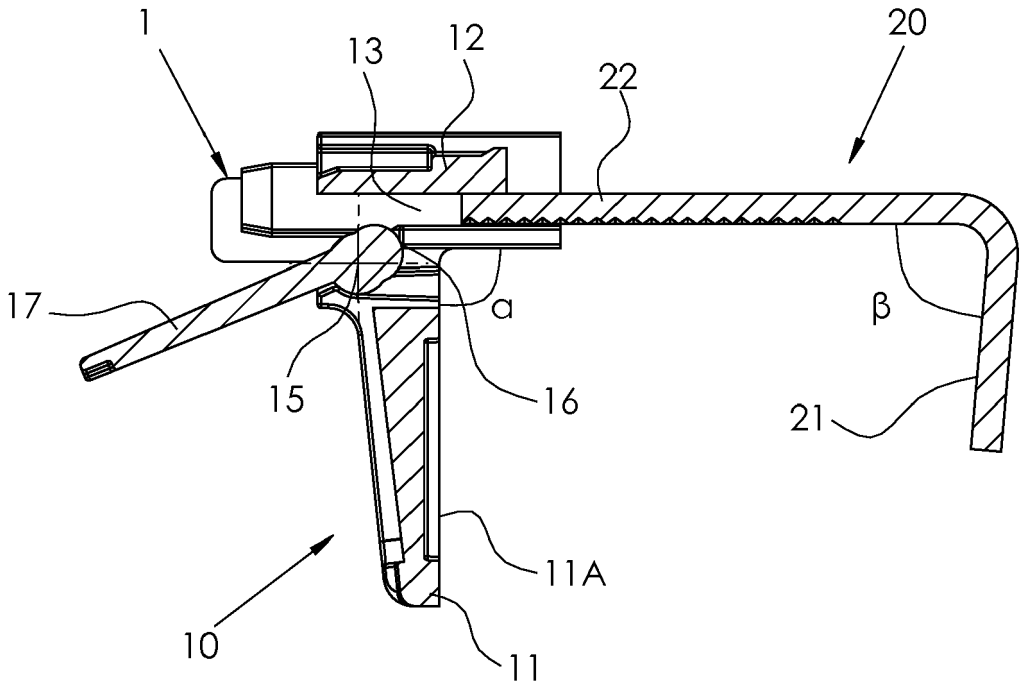


FIG. 3A

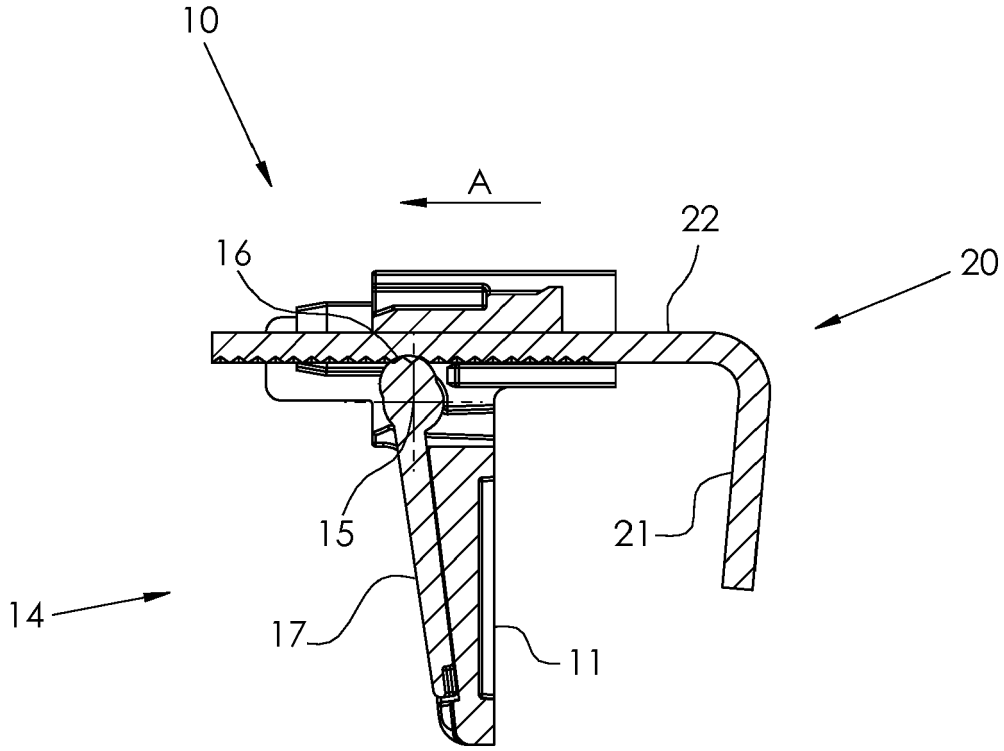


FIG. 3B

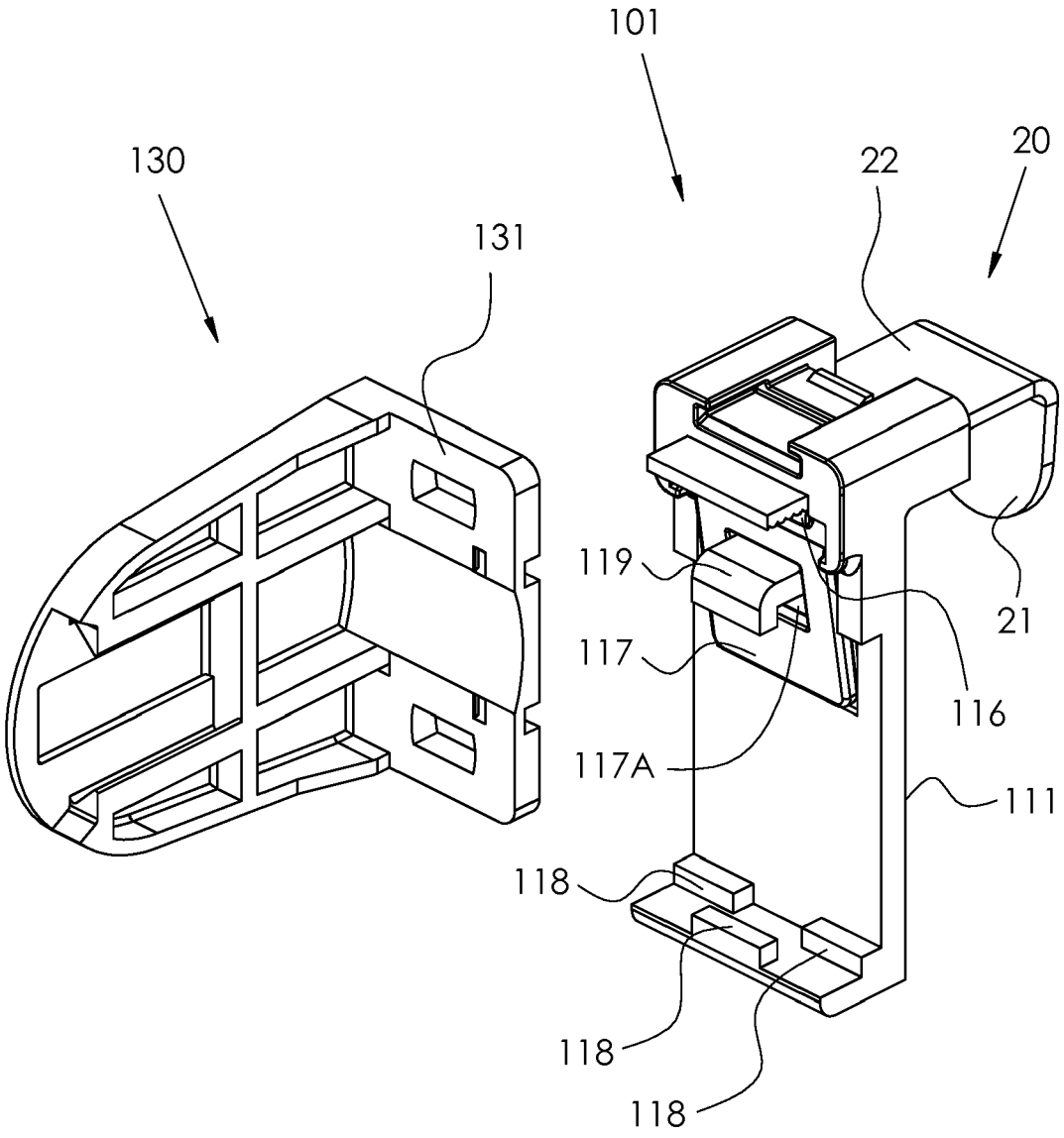


FIG. 4A

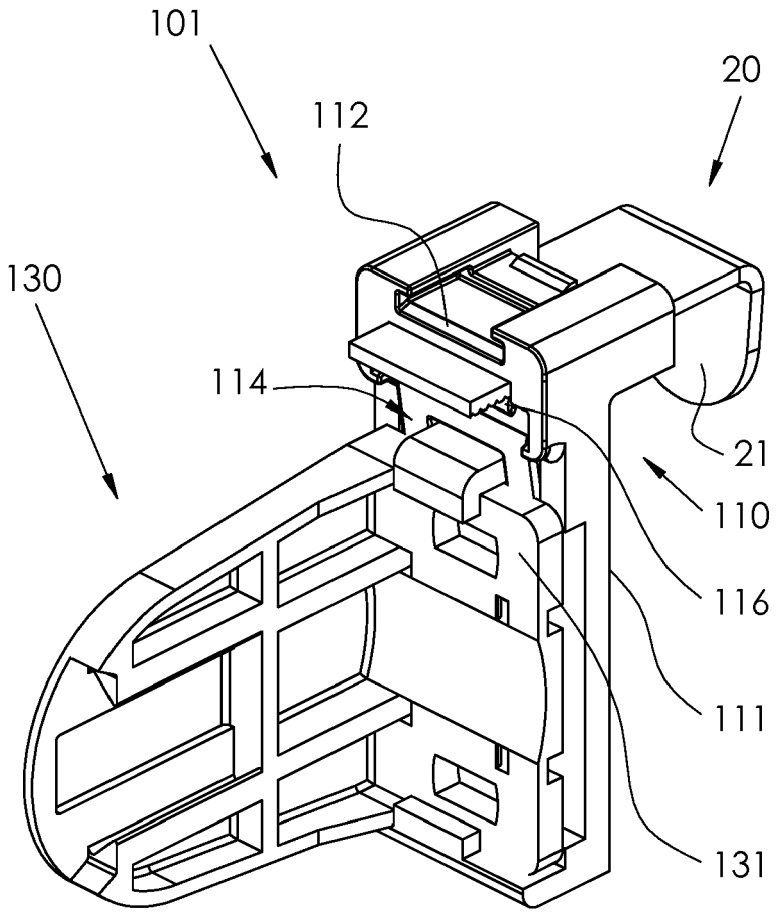
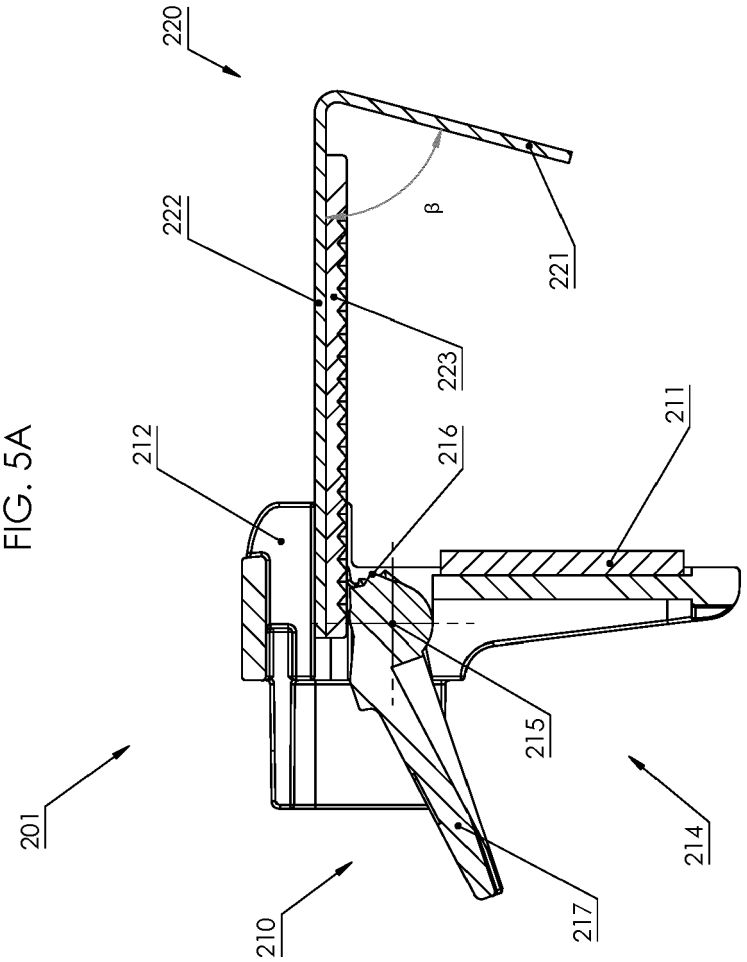


FIG. 4B

FIG. 5A



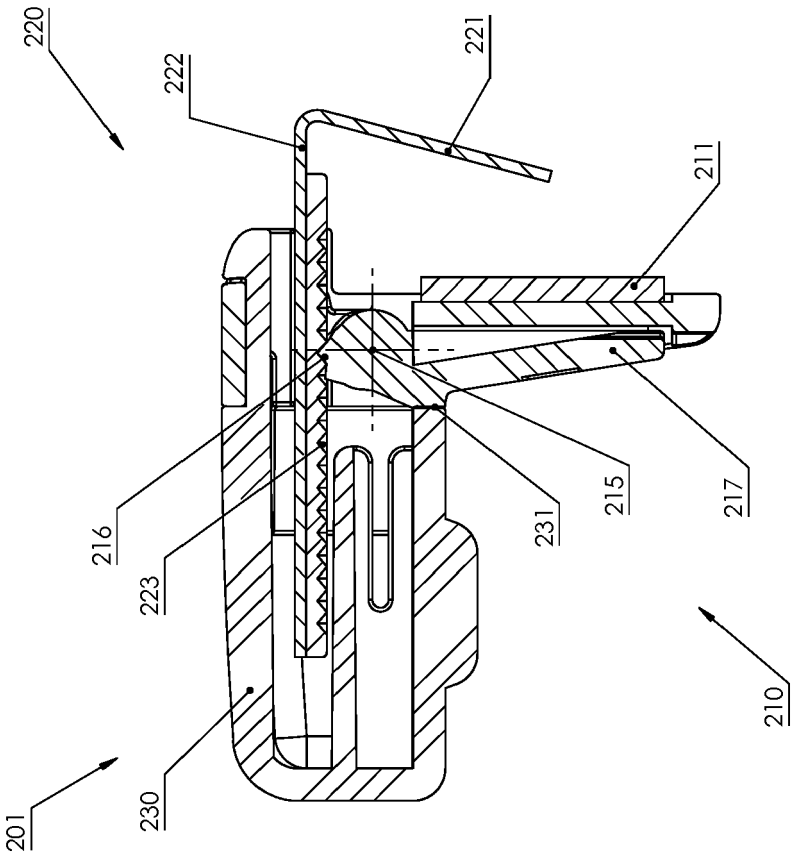
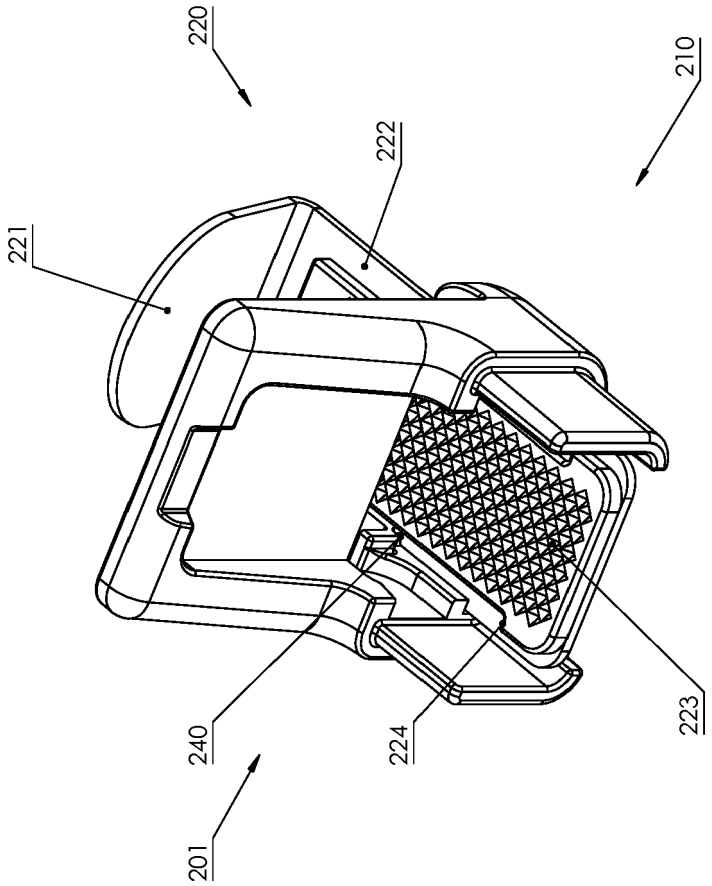


FIG. 5B

FIG. 5C



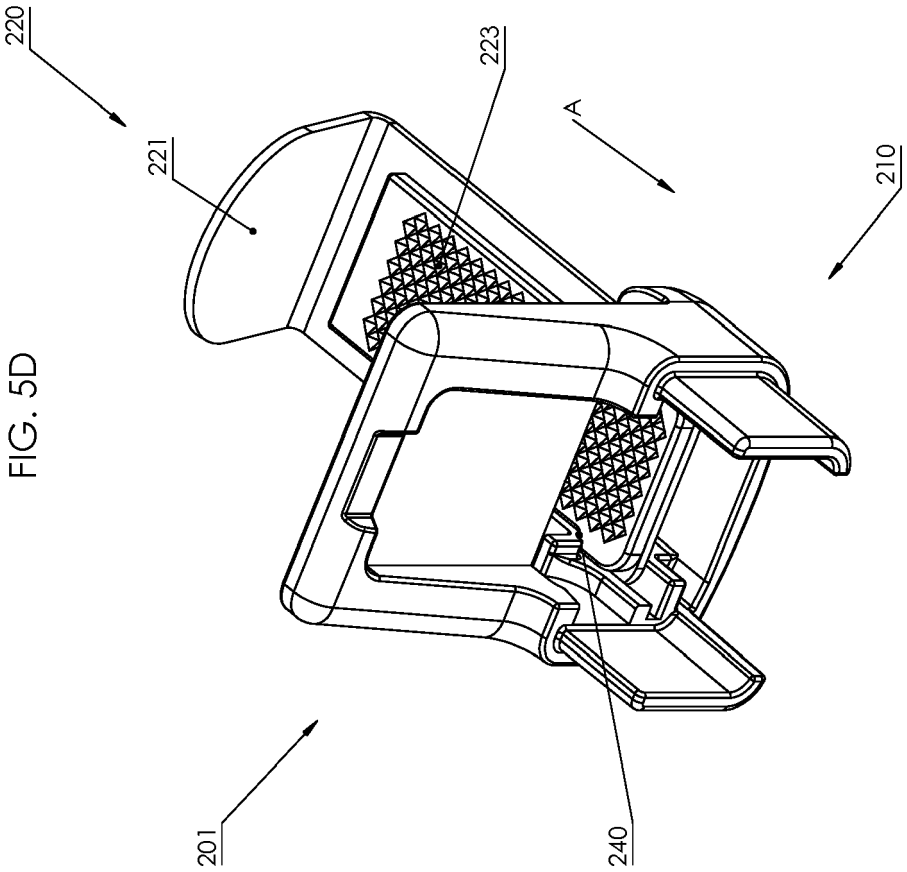
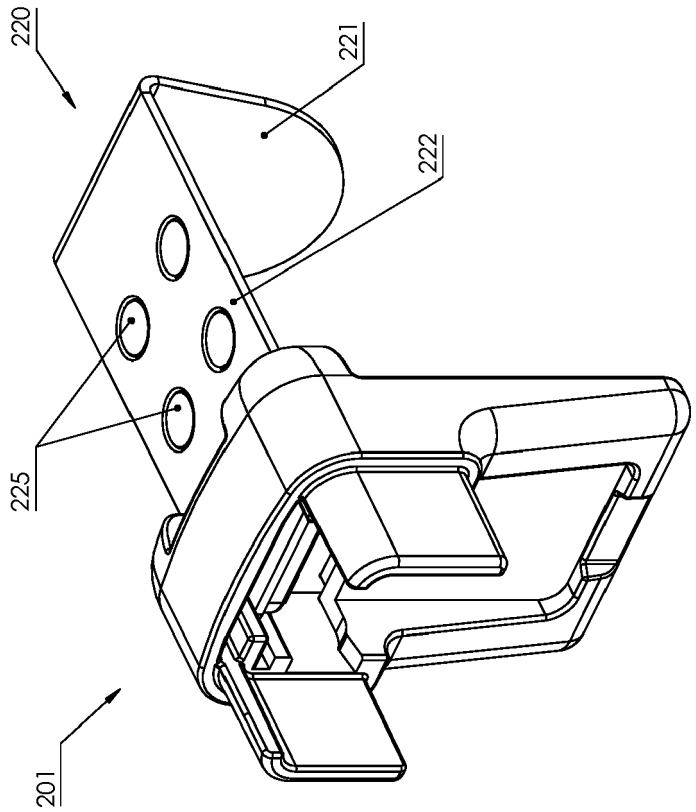


FIG. 5D

FIG. 5E



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EUROPEAN SEARCH REPORT

Application Number
EP 19 15 8568

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	WO 2016/015080 A1 (HOFINGER STEFAN [AT]) 4 February 2016 (2016-02-04) * figures 1,3-7,9 * * page 4, line 17 - line 23 * * page 5, line 9 - page 6, line 13 * -----	1-15	INV. E06B9/266 E06B9/323
A	DE 20 2011 052021 U1 (INVENTEX ESTABLISHMENT [LI]) 19 November 2012 (2012-11-19) * claims 1,9 * * figures 1,5,6 * -----	1	
			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	2 July 2019	Tänzler, Ansgar

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