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Description

The present invention relates to a device for inserting an impost into a door or window frame with two opposed parallel frame legs.

By impost is meant a muntin used for the purpose of dividing a window frame. Conventionally, one starts by making the frame, which may consist of hollow plastic profles, and then inserting the impost. This makes it necessary to force the frame apart, i.e. to part the opposed parallel frame legs somewhat in order to insert the impost inbetween. The difficulty during insertion is essentially that modern hollow plastic profile windows have relatively complex profile constructions on the inside, comprising indentations and gradations. This means it is generally not easy to insert the impost.

One previous solution to this problem consists of parting the opposed frame legs of the frame using a suitable spreading device, and then inserting the impost. This process is relatively complex and comparatively expensive as the spreading devices have to be made available separately. Until now, there has been no means of equipping the impost connectors themselves with suitable means for parting the frame during insertion. This is because, amongst other things, the frame and the imposts are relatively bulky parts hence it appears impraticable to achieve accurate insertion whilst simultaneously handling a spreading mechanism. Further, it is desirable to be able to re-tension the impost after insertion. (Compare in this respect the devices described in DE 102 23 063 A1 and GB 2297 992A.)

It is therefore a task of the present invention to create a device for inserting an impost of the above-mentioned type such that additional aids are not required during assembly, whilst ensuring that the insertion process is simple nonetheless.

Another task consists in designing a corresponding device so that the fit of the impost in the frame can be re-tensioned even after the insertion process.

These tasks are solved according to the invention by a device with the features of claim 1.

The device according to the invention for inserting an impost into a door or window frame comprises a tensioning device integrated into the frame construction, used to spread the opposed frame legs and to shift the impost from a first leg against the opposite leg. During this process the impost is squeezed by the first frame leg and shifted forward towards the second frame leg until the gap between the legs is sufficient to insert the impost past the indentations of the window profile.

For this purpose, the device comprises a spreading block which can be firmly inserted into the first leg and to which a pivotable clamping finger is attached. This latter can be pivoted between a position in which it lies on top of the first leg, in which it points against the direction of insertion of the impost, and a position in which it protrudes from this leg. The impost accommodates an end piece which engages in a form-locking manner with the clamping finger for the purpose of shifting the impost. To this end, the end piece has a conduct for receiving an extension of the end of the clamping finger. This conduct comprises a bottom opening into which the finger end can slide, a sliding section extending upwards from the opening along the axis of the impost, and a locking section which is angled laterally with regard to the sliding section,inside which the end of the finger rests and is locked in the final assembled position.

To insert the impost, the front edge of the bottom of the latter is initially brought to rest on the end of the clamping finger with the latter in its lying position. The impost is then pressed in the direction of the first frame leg on which the clamping finger is mounted with the help of the spreading block. The impost slides over and past the clamping finger up to approximately the latter's pivot axis. In this position, a torque is exerted on the clamping finger to pivot it into its protruding position, using a suitable tool, for example. During this pivoting, the end of the clamping finger engages in the bottom opening of the conduct and presses the end piece together with the impost upwards and further forward until the impost is disposed above its final assembled position. By then, the extended end of the finger has already reached the beginning of the vertical sliding section of the conduct so that the end piece can slide downward together with the impost and the impost sits securely in the first frame leg. All that is required now is to lock it in this position. This is done by exerting torque on the clamping finger, as a result of which the end of the latter slides laterally into the locking section.

The above-described insertion process can be carried out without precision threading of the clamping finger into the end piece. Once the end piece rests on the clamping finger, the end of the latter automatically engages in the opening when the clamping finger is pivoted upwards by the tool. All that is then required is application of sufficient force to shift the impost forward and upward until the end of the clamping finger reaches the sliding section.

Moreover, the locking section can be contrived so that when the clamping finger is pivoted, tensile force is exerted on the impost in the direction of the first frame leg, thereby tensioning the impost against the first frame leg. This allows re-tensioning of the impost in the assembled state.

According to a preferred form of embodiment of this invention the conduct of the end piece is formed by recesses in opposed side walls of the end piece, and the extension of the end of the

clamping finger is formed by pins which protrude in opposite directions from the end of the clamping finger.

According to another preferred form of embodiment, the end piece comprises an outer sleeve and a tension anchor housed within the sleeve, with the recesses for forming the conduct being formed by holes in the lateral walls of the tension anchor. In this case, the sleeve can form a solid outer wall of the end piece, said wall possibly being provided with outer ribs for the purpose of fitting the sleeve snugly inside the end of the impost. Meanwhile, the holes in the lateral walls of the tension anchor, which form the inside walls of the end piece, form the conduct for the clamping finger.

The locking section preferably has an arcuate shape and extends from the top end of the sliding section generally opposed to the shifting direction of the impost. In this case, the clamping finger, in the situation in which the impost has slid downward into its assembled position and the clamping finger end is positioned at the transition point between the sliding section and the locking section, must be clamped in the locking section opposed to the shifting direction of the impost. During this movement a tensile force can be exerted downward on the impost by means of a corresponding movement of the locking section, as described above.

The locking section is also preferably provided with detents for receiving a corresponding detent of the extension of the end of the clamping finger.

The bottom opening of the conduct is also preferably extended downward in the shape of a funnel.

According to another preferred embodiment, the end piece is provided at its bottom rim which runs in front in the shifting direction of the impost with a cam, which, when the impost shifts, abuts against an upper abutment surface of the clamping finger in its lying position.

Hence the cam is provided to rest on the abutting surface of the clamping finger during the shifting movement of the impost. Once the cam arrives at the end of the abutting surface, it can, together with the impost, be lifted above and past the axis of the clamping finger into the assembly position.

According to another preferred embodiment, the opening of the conduct is delimited at its side averted from the cam by an inclined or acuate wall which is positioned relative to the cam in such a way that during an upward pivoting movement of the clamping finger in a position in which the cam rests on the axis end of the abutting surface, the extended end of the finger abuts against the wall and presses the end piece upwards.

Hence the inclined or arcuate wall serves as a counter-pressure surface for the clamping finger end during the pivoting movement of the clamping finger. During the lifting of the end piece together with the impost, this wall rests against the clamping finger end and the latter slides along the wall until it reaches the sliding section.

According to another preferred embodiment, at least one end of the axis of the clamping finger is contrived to receive, in a form-locking manner, a tool for transferring a torque to the axis. The axis end can, for example, be formed as a hexagonal tube into which a corresponding hexagonal key can be inserted.

According to a further preferred embodiment the end piece is formed as one piece.

According to a further preferred embodiment, the axis has a hollow inner cross-section from whose walls opposed protrusions extend radially inward in a pairwise manner. These protrusions serve to absorb a torque exerted by the tool inserted in the hollow inner cross-section and to transfer it to the axis. Hence the projections improve the form-lock between the axis and the tool inserted in it, and slipping or deformation are avoided during the application of torque. This is particularly important when high lever forces are exerted by the tool.

According to a preferred embodiment, the axis has a generally hollow circular inner cross-section and the protrusions have a generally triangular cross-section. Hence the protrusions form teeth which project inward from the wall of the axis and grip against the tool.

According to another preferred embodiment, the axis is contrived as one piece with the clamping finger, and the spreading block is comprised of at least two parts with the axis lying between them.

A preferred example embodiment of the invention will be described below with reference to the drawings in which

Fig. 1	is a perspective view of a first embodiment of the device according to the invention for inserting an impost into a door or window frame, shown in the assembled condition,
Fig. 2	shows the device of Fig. 1 in a partially cut open condition;
Fig. 3 and 4	are partial views of the device of Fig. 1 in disassembled condition;
Fig. 5	shows a side view of a tension anchor which is part of the device of the previous figures;

Fig. 6 is a perspective view of the tension anchor of Fig. 5, seen from below

Fig. 7 to 14 show a sequence of motion for inserting an impost in a door or window frame with the device according to the invention, shown in cross-sectional views;

Fig. 15 is an exploded view of a second embodiment of the device according to the invention for inserting an impost;

Fig. 16 shows a perspective view of the second embodiment of Fig. 15 in assembled condition;

Fig. 17 to 19 are various views of a clamping finger and the axis which form part of the second embodiment of Fig. 15 and 16; and

Fig. 20 and 21 are various views of a tool for transferring a torque to the axis.

Device 10 in Fig. 1 serves to insert an impost, not shown here in greater detail, into a door or window frame between the opposed parallel frame legs of the latter. Device 10 comprises a plastic spreading block 12, shown at the bottom of Fig. 1, an end piece designated as a whole as 14, which rests on the spreading block when the impost is in the assembled position, and a clamping finger 16, which is pivotably attached to spreading block 12, the end of which is intended to engage in a form-locking manner in end piece 14 from below. Clamping finger 16 is only partially visible in Fig. 1 and more details will be given below in respect of its form and function.

Spreading block 12 is intended for insertion into a first frame leg, formed for example as a hollow plastic profile. To this end, the underside of the spreading block is formed to match the hollow profile forming the first frame leg so that spreading block 12 fits perfectly on top of it. Assembly screws 18 are provided for the purpose of attaching to this frame leg, they are screwed through spreading block 12 into the first frame leg.

Running crosswise through spreading block 12 there is a tensioning axis 20 whose ends facing the sides of the spreading block are open, into which a tool can be inserted to transmit a torque to tensioning axis 20. In the present case, the ends of tensioning axis 20 are formed as hexagonal tubes into which a corresponding hexagonal socket spanner can be inserted to turn tensioning axis 20. In the assembled position, tensioning axis 20 lies parallel to the first and second frame legs between which the impost is inserted.

The side of device 10 facing the viewer in Fig. 1 is the side from which the impost is to be inserted into the frame. On this side, spreading block 26 is rounded on its upper side. The

partially rounded upper side serves to receive end piece 14 which is described in more detail below. In its centre, spreading block 12 has a slot-like recess 22 in which clamping finger 16 rests. This clamping finger 16 is pushed onto tensioning axis 20 in such a manner that tensioning axis 20 transfers a torque to clamping finger 16 as it turns. Rotating tensioning axis 20 therefore allows clamping finger 16 to be pivoted between a position in which it lies on the first frame leg, not shown in Fig. 1, and a position in which it protrudes from the first frame leg, in which position clamping finger 16 can engage in end piece 14 from below in a form-locking manner.

End piece 14 is formed by an external sleeve 26 with a horizontal rectangular cross-section and a tension anchor 28 contrived to fit inside it. Sleeve 26 is provided on its outside with longitudinal ribs 30 and is intended to be inserted into the bottom end of the hollow profile of the impost. At the bottom end of sleeve 26 there is a resting flange 32 whose shape matches the top side of spreading block 12. In the assembled position shown in Fig. 1, flange 32 rests directly on spreading block 12. Tension anchor 28 has a top section 34 projecting out of sleeve 26, plus a horizontally circumferential rib 36 which serves as a limit stop and transfers a force acting vertically downward on tension anchor 28 to sleeve 26. Tension anchor 28 is formed as a hollow profile, thereby allowing accommodation of clamping finger 16 from below in its erect position. For the purpose of anchoring the end of clamping finger 16 in tension anchor 28 in a form-locking manner, the latter is provided below rib 36 with a conduct formed by holes in the lateral walls of tension anchor 28. This conduct is not visible in Fig. 1 and will be explained in more detail below.

Fig. 2 shows the arrangement illustrated in Fig. 1 as explained above in a cut-open state. One can see a cross-section through the tensioning axis 20, clamping finger 16 and a lateral wall 42 of tension anchor 28. In this illustration one can see that clamping finger 24, at its free end, is provided with lateral extensions, namely with pins 38, whose main axes lie parallel to tensioning axis 20. These pins 38 engage in the conduct 39 of tension anchor 28, namely in holes 40 in the lateral walls 42 of tension anchor 28, to which reference will be made in more detail below. In particular, pins 38 can be locked in conduct 39 in such a manner that end piece 14, which is formed by sleeve 26 and the tension anchor 28 therein, sits firmly on spreading block 12 such that it can no longer be lifted off this latter. In this manner the impost, into the end of which end piece 14 is inserted, is firmly assembled on the first frame leg on top of which spreading block 12 rests.

Fig. 3 shows further details of spreading block 12. In this presentation, the end piece 14 which sits on top of it in Fig. 1 is omitted so that clamping finger 24 with lateral pins 38 is clearly visible. Pins 38 are provided with upper detents 44 which serve to lock pins 38 in holes 40. Tensioning axis 20 and clamping finger 16 are preferably, but not necessarily, made of metal

whereas other parts of the device such as spreading block 12, sleeve 26 and tension anchor 28 can be made from high-strength plastic. These are all materials conventionally used in window construction.

Fig. 4 shows end piece 14 in disassembled state, in which tension anchor 28 has been pulled upward out of sleeve 26. One can clearly see holes 40 in the lateral walls 42 of tension anchor 28. Pins 38 can engage in these holes 40 from the inside and are guided within them. The shape of holes 40 is visible in more detail and more easily in the side view shown in Fig. 5, which, for the sake of clarity, shows tension anchor 28 by itself.

The side outside view in Fig. 5 shows an angled complete hole 40 in outer wall 42. Adjoining this latter downwardly there is a recess not visible in Fig. 5, which extends from the inside of lateral wall 42 partly into this latter, so that the exterior of the lateral wall 42 remains intact in this area. This opening part is explained in more detail in the following figures. It extends from the bottom edge 48 of tension anchor 28 to a sliding section 50 which extends vertically, i.e. along the longitudinal axis of tension anchor 28. Adjoining the top end of this sliding section 50 there is a slightly arc-shaped locking section 52 which is articulated sidewards from sliding section 50. The top side of this locking section 52 is provided with a continuous crosspiece 54 which is provided on its underside with teeth forming detents 56 in which the above-described detent 44 of pin 38 of clamping finger 24 can engage in various locking positions. Pin 38 can slide from below through the opening into sliding section 50 and onward inside this latter, upward to the beginning of locking section 52 and from there sidewards along locking section 52 into various locking positions. Conduct 39 is therefore formed by the opening, sliding section 50 and locking section 52.

Fig. 6 is a perspective view of tension anchor 28 seen from below, in which openings 58 of conducts 39 are also visible, into which pins 38 can engage. Openings 58 have an approximately funnel-shaped cross-section (in the sectional plane parallel to wall 42), which widens downwards to facilitate reception of pin 38. If pin 38 is manoeuvred into opening 58 during the pivoting movement of clamping finger 24 it automatically slides to sliding section 50 and is guided further inside this latter, as described above.

The sequence of movements for inserting an impost into a door or window frame with the help of the above-described device will be described below with reference to Fig. 7 to 14.

The side view in Fig. 7 shows at bottom right a cross-section through a first frame leg 60 of a door or window frame not shown in further detail. This frame leg 60 is contrived as a hollow plastic profile which is reinforced on the inside. The profile as such is already known and is not the object of the present invention. On its top side, frame leg 60 has an external flange 62 and

an additional indentation 64 approximately in the middle of the cross-section of frame leg 60, which are provided with sealing profiles. Indentation 64 in particular poses problems during the insertion of an impost 70 standing perpendicular to the first frame leg 60 and shown at top left in Fig. 7. Impost 70 is also contrived as a hollow profile which is reinforced on the inside.

Impost 70 is to be inserted between the first frame leg 60 shown at bottom in Fig. 7 and a second top frame leg parallel to the latter. To this end, impost 70, in the position in Fig. 7, already abuts the second top frame leg with its top end not shown in more detail, and now has to be moved from this position into the position shown in Fig. 14 in which its external side shown on the right in the figures lies flush with the external side of external flange 62 of first frame leg 60. It is evident that, departing from the position shown in Fig. 7, this requires a tilting or pivoting motion of impost 70 in the direction of first frame leg 60, during which the bottom end of impost 70 is pushed onto the first frame leg 60. This is where indentation 64 causes particular problems as the bottom end of impost 70 has to be lifted up and beyond this latter. The device 10 according to the invention facilitates this process whilst providing simultaneous automatic alignment of impost 70 in the assembled position.

In Fig. 7, spreading block 12 is already in its position on top of first frame leg 60, with clamping finger 16 pointing in the direction of impost 70 and lying flat on top of frame leg 60. End piece 14 with sleeve 26 and tension anchor 28 therein are pushed into the bottom end of impost 70. Tension anchor 28 is secured inside impost 70 by a pin which is pushed sidewards through the hollow profile of impost 70 and a hole 72 in the upper section 34 of tension anchor 28.

Firstly, sleeve 26, with the projecting lower end of cam 74, is set against the lying clamping finger 24, namely on the end of an abutting surface 76 provided for this purpose, on which cam 74 can slide. From this position (Fig. 7), the bottom end of impost 70 is pushed towards first frame leg 60. As the abutting surface 76 forms a rising ramp in the direction of forward movement, pressure is simultaneously exerted along the axis of impost 70 upward in the direction of the second frame leg so that the two frame legs are pulled apart. The final position of cam 74 on the axis-oriented end of abutting surface 76 is shown in Fig. 8. Cam 74 has now moved so far towards first frame leg 60 that further movement across tensioning axis 20 is not possible. During further travel, impost 70 is lifted up and beyond tensioning axis 20 and indentation 64, and during this process the two frame legs are pushed further apart.

To this end, a torque is exerted on tensioning axis 20 with the aid of a tool auch as a socket spanner which is inserted into the end of tensioning axis 20. During this process, clamping finger 20 is pivoted upwards in clockwise fashion, as shown in Fig. 9 (arrow A). As the pivoting movement continues, pin 38 abuts against an obliquely running slightly arcuate wall 78 of opening 58 of conduct 40. The pressure of pin 38 against this wall 78 lifts tension anchor 28

together with sleeve 26 and the entire impost 70, and pin 38 slides inside opening 58 towards the bottom end of sliding section 50 (Fig. 10), so that the pin 38 ends up in the position shown in Fig. 11. Further pivoting of clamping finger 24 presses the impost further in its direction of movement whilst impost 70 can slide simultaneously downards under its own weight, whilst pin 38 moves upwards inside sliding section 50. Fig. 12 shows pin 38 in an intermediate position, whilst Fig. 13 shows pin 38 in its position at the top end of sliding section 50 and at the beginning of locking section 52. In this position impost 70 has already reached its assembled position.

In this position impost 70 is locked in place by pivoting clamping finger 16 counter-clockwise so that detent 44 on the top side of pin 38 can engage with one of detents 56 of crosspiece 54. During the movement of pin 38 along locking section 52 the latter exerts downward tension on tension anchor 28 so that impost 70 is tensioned on first frame leg 60. Several detents 56 are provided in locking section 52 to allow later re-tensioning of impost 70.

Flange 32 of end piece 14 for resting on spreading block 12 can be contrived as a seal which seals the entire arrangement against humidity or similar.

Fig. 15 shows a second embodiment of a device 100 for inserting an impost 70 into a door or window frame. The basic components and the mode of functioning of this device 100 are essentially the same as the above-mentioned device 10. Here, too, there is a spreading block designated as a whole as 112, which holds a tensioning axis 120. Connected to tensioning axis 120 there is a clamping finger 116 which can be pivoted by rotating tensioning axis 120. Sitting on spreading block 112 there is an end piece 114 with a conduct 139 for receiving the end of clamping finger 116 so that clamping finger 116 can engage in form-locking manner in end piece 114 from below. Conduct 139 is contrived like the previously described conduct 39 of the above-described device 10 and its mode of functioning in its interaction with the end of clamping finger 116 is essentially the same as described in connection with Fig. 9 to 14, such that a detailed description of the sequence of movements will not be given here to avoid repetition. In this case, too, a flange 132 is positioned between spreading block 112 and end piece 114, which is formed as a seal.

The end piece 114 of the present embodiment of device 100 differs from end piece 14 of the above-described device 10 in that it is contrived as one piece. It is not, therefore, composed of an external sleeve and separate tension anchor which is inserted inside the sleeve; instead, the functions of sleeve and tension anchor are united in a single element. Accordingly, end piece 114 has a bottom part 200 which can be snugly inserted from below into the impost 70 not shown in more detail, and, adjoining it and contrived as one piece with it, an upper part 202, which functions as the tension anchor. This upper part 202 is provided with lateral openings

204 through which a slide-in axis 206 can be inserted. This slide-in axis 206 is anchored in the walls of impost 70 in a manner not shown in more detail. The ends of slide-in axis 206, which have a C-shaped cross-section, are closed off with covering caps 208. Covering caps 221 are also provided to close off the ends of axis 120.

The bottom part 200 of end piece 114 is provided with front and rear ribs 210. The conduct 139 is held in place between front and rear external walls of bottom part 200 by bar-shaped struts 212.

In the present embodiment, spreading block 112 is composed of two parts, namely a bottom part 214 and a top part 216. The bottom part 214 has, on its top side, a receiving element 218 with a semicircular cross-section, which serves to receive tensioning axis 120. A corresponding semicircular receiving element 220 is provided on the bottom side of the top part 216 of tensioning block 112. Both receiving elements 218,220, when assembled, encircle tensioning axis 120 in such a manner that axis 120 can rotate between them inside spreading block 112. The two parts 214,216 of spreading block 112 are held together by screws which extend from above downward through both parts into the profile frames. In this manner, when the screws are tightened, parts 214,216 are tensioned against each other. A bottom seal 222 is also attached to the underside of bottom part 214.

In the present form of the embodiment, tensioning axis 120 is not a slide-in axis for sideward insertion through clamping finger 116, but rather clamping finger 116 and tensioning axis 120 are formed as one piece. This unit composed of tensioning axis 120 and clamping finger 116 is shown in greater detail in various perspective views in Fig. 17 to 19. The tensioning axis has, at both ends, a circular outer cross-section and a circular hollow inner cross-section 224. This inner cross-section 224 is provided with two opposed protrusions 226 which extend radially inwards from the inside wall of inner cross-section 224. This can be seen particularly well in the side view shown in Fig. 18. Protrusions 226, which themselves have an approximately triangular cross-section, therefore separate two arc-shaped inner wall portions 228 of inner cross-section 224 and constrict interior cross-section 224 into two circular segments 230 which join together in a free area in the middle of tensioning axis 120 between protrusions 226.

The lateral flanks of protrusions 226 serve as contact surfaces for matching surfaces of a tool which is inserted in the corresponding end of tensioning axis 120, as generally shown in Fig. 21. If torque is applied via the tool, this is transferred by protrusions 226 to the entire unit comprising tensioning axis 120 and clamping finger 116, and clamping finger 116 can be pivoted. In this manner, even large amounts of torque can be safely absorbed and transferred without risk of deformation of the tensioning axis 120 or the tool. At the same time, tensioning axis 120 with its circular outer cross-section engages securely at its ends in the matching

receiving elements 218,220 of parts 216,214 of spreading block 112 and slides therein during the pivoting movement of clamping finger 116.

The tool 300 shown in Fig. 20 and 21 comprises a head 302 which is approximately cylindrical, an insertion pin 304, which adjoins head 302 axially, and a lever 306 which extends radially from the end of the head 302 furthest from insertion pin 304, and has a curved section 308. The insertion pin is intended to be inserted into the hollow inner cross-section 224 at the end of tensioning axis 120 to transfer a torque to tensioning axis 120, caused by pivoting the lever 306. To this end, insertion pin 304 has a cross-section (Fig. 20) which matches that of the inner cross-section 224 of tensioning axis 120. That is to say, the cross-section of insertion pin 304 is circular with two opposed indentations 310 into which protrusions 226 are pushed. In this manner, the cross-section of the solid insertion pin 304 is also constricted into two circular segments 312 which join together in the centre of the axis. When insertion pin 304 is rotated, the lateral flanks of indentations 310 come into contact with the corresponding contact surfaces of protrusions 226, producing a good form-lock.

Patentkrav

1. Indretning til indsætning af en kæmfer (70) i en dør- eller vinduesramme med to parallelt over for hinanden liggende rammeben, med en spændeindretning (10,100), der er integreret i rammekonstruktionen, til at sprede rammebenene og til at forskyde kæmferen (70) fra et første rammeben (60) mod det andet rammeben,
med en spredeklods (12,112), der kan indsættes i det første rammeben (60), **kendetegnet ved** en spændefinger (16,116), som er anbragt på spredeklodsen (12,112) mellem en stilling, der ligger på det første rammeben (60), og en på denne udragende stilling, så den kan svinge omkring en parallel akse (20,120),
og et endestykke (14), som kan indsættes i en ende af kæmferen (70), og som samvirker med den frie ende af spændefingeren (16,116) i en formsluttende forbindelse med henblik på at forskyde kæmferen (70),
hvilket endestykke (14,114) er forsynet med en føring (39,139) til optagelse af en udvidelse af spændefingerens (16,116) ende, hvilken føring omfatter en nedre åbning (58), en glidesektion (50), som strækker sig opad fra åbningen langs med kæmferaksen, og en låsesektion (52), som er vinklet sideværts fra glidesektionen (50).

2. Indretning ifølge krav 1, **kendetegnet ved, at** føringen (39,139) dannes af udsparinger i overfor liggende sidevægge (42) af endestykket (14,114), og at udvidelsen af spændefingerens (16,116) ende dannes af tappe (38), som rager ud liggende over for enden af fingeren.

3. Indretning ifølge krav 2, **kendetegnet ved, at** endestykket (14) omfatter et ydre hylster (26) og et trækanker (28), der ligger inde i hylsteret (26), og at udsparingerne til dannelse af føringen (39) dannes af gennembrydninger (40) i trækankerets (28) sidevægge (42).

4. Indretning ifølge et af de foregående krav, **kendetegnet ved, at** låsesektionen (52) forløber bueformet og strækker sig fra glidesektionens (50) øvre ende omtrent modsat kæmferens (70) forskydningsretning.

5. Indretning ifølge et af de foregående krav, **kendetegnet ved, at** låsesektionen (52) er forsynet med paler (56) til optagelse af en tilsvarende pal (44) af udvidelsen af spændefingerens (16,116) ende.

6. Indretning ifølge et af de foregående krav, **kendetegnet ved, at** den nederste åbning (58) er udvidet tragtformet nedadtil.

7. Indretning ifølge et af de foregående krav, **kendetegnet ved, at** endestykket (14,114) ved sin underkant i kæmferens (70) forskydningsretning har en knast (74), som ved forskydningen af kæmferen (70) ligger an mod en øvre anløbsflade (76) af spændefingeren (16,116) i sin liggende stilling.

8. Indretning ifølge krav 7 i forbindelse med krav 6, **kendetegnet ved, at** åbningen (58) på den side, som vender bort fra knasten (74), afgrænses af en skrå eller bueformet væg (78), som er anbragt på en sådan måde i forhold til knasten (74), at den udvidede ende af fingeren (16,116) ved en opadrettet svingbevægelse af spændefingeren (16,116) i en position, i hvilken knasten (74) ligger ved enden på aksesiden af anløbsfladen (76), træffer på væggen (78) og endestykket (14,114) trykker opad.

9. Indretning ifølge et af de foregående krav, **kendetegnet ved, at** mindst en ende af spændefingerens (16,116) akse (20,120) er udformet til en formsluttende optagelse af et værktøj til overføring af et drejningsmoment til aksen (20,120).

10. Indretning ifølge et af de foregående krav, **kendetegnet ved, at** endestykket (114) er udformet ud i et.

11. Indretning ifølge et af de foregående krav, **kendetegnet ved, at** aksen (120) har et hult indvendigt tværsnit (224), fra hvis vægge der radialt indad strækker sig fremspring (226), der ligger parvis over for hinanden.

12. Indretning ifølge krav 11, **kendetegnet ved, at** aksen (120) har et omtrent cirkelformet hult indvendigt tværsnit (224), og at fremspringene (226) har et omtrent trekantet tværsnit.

13. Indretning ifølge et af de foregående krav, **kendetegnet ved, at** aksen (120) er udformet ud i et med spændefingeren (116), og at spredeklodsen (112) er sammensat af mindst to dele (214,216), imellem hvilke aksen (120) ligger.

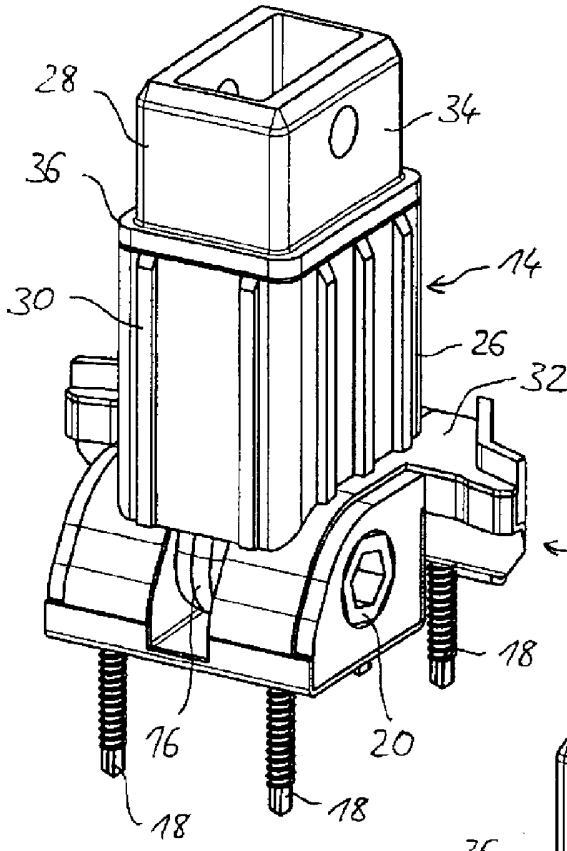
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Fig. 1

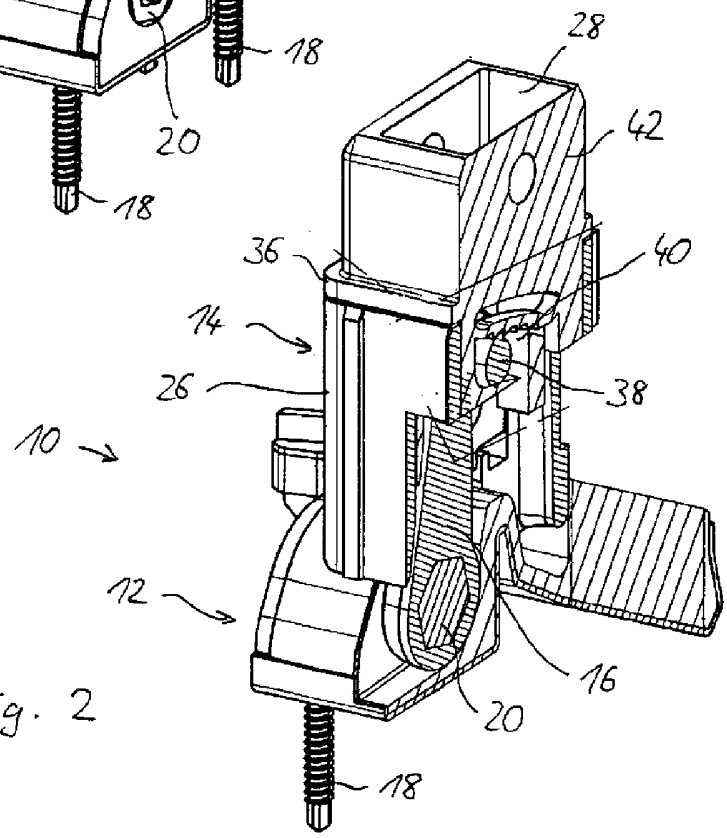
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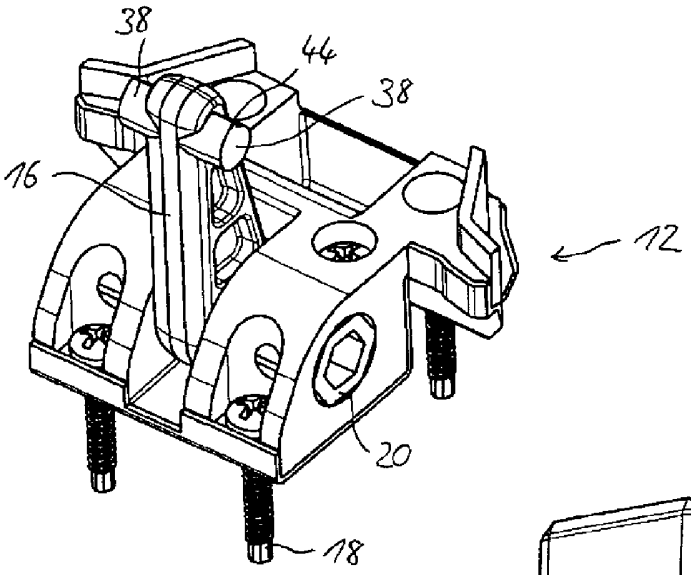
Fig. 2



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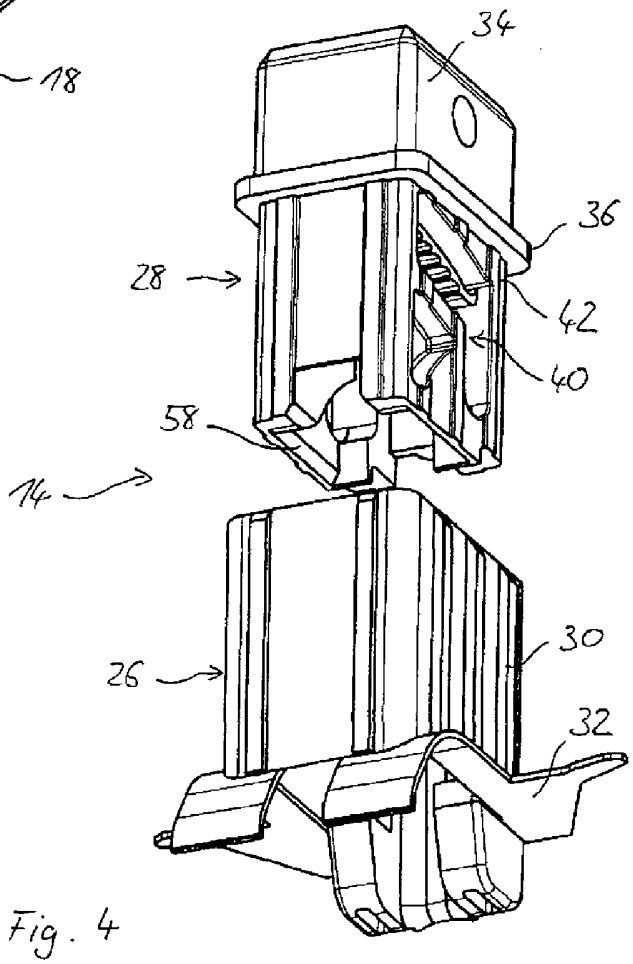

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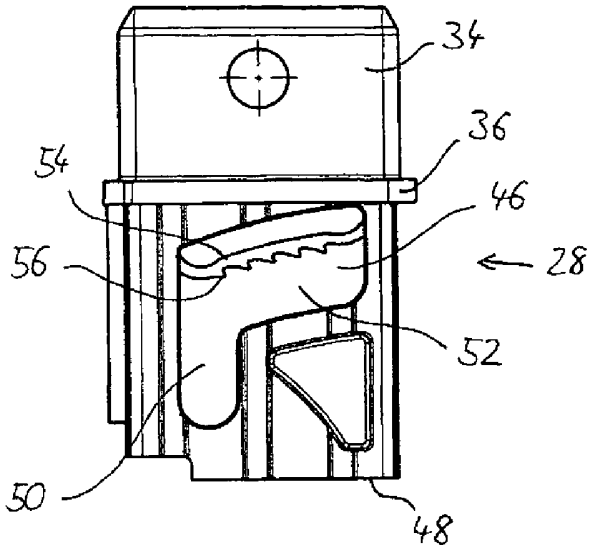


Fig. 5

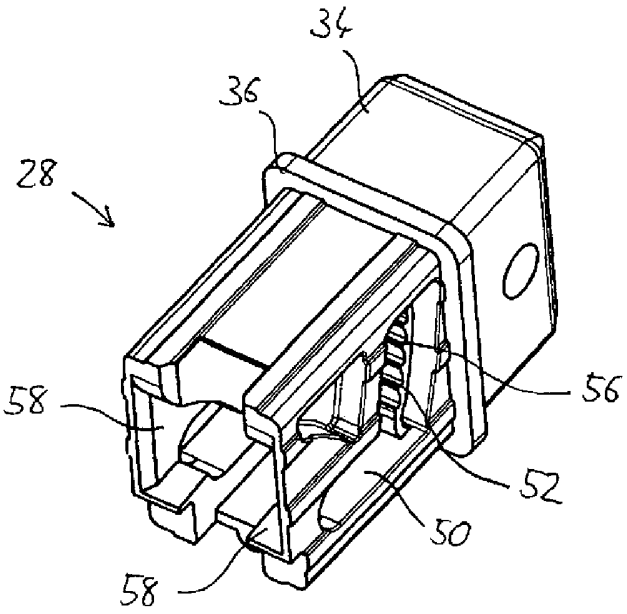


Fig. 6

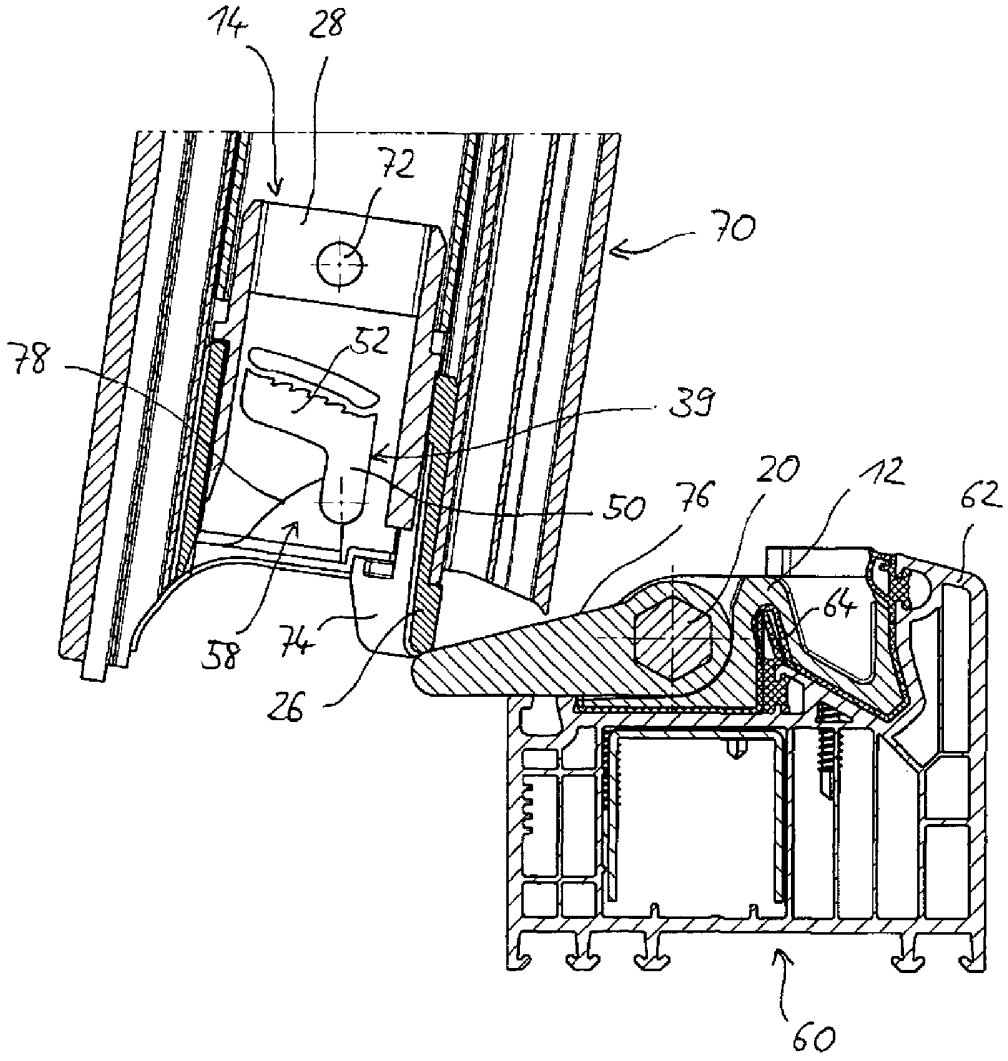
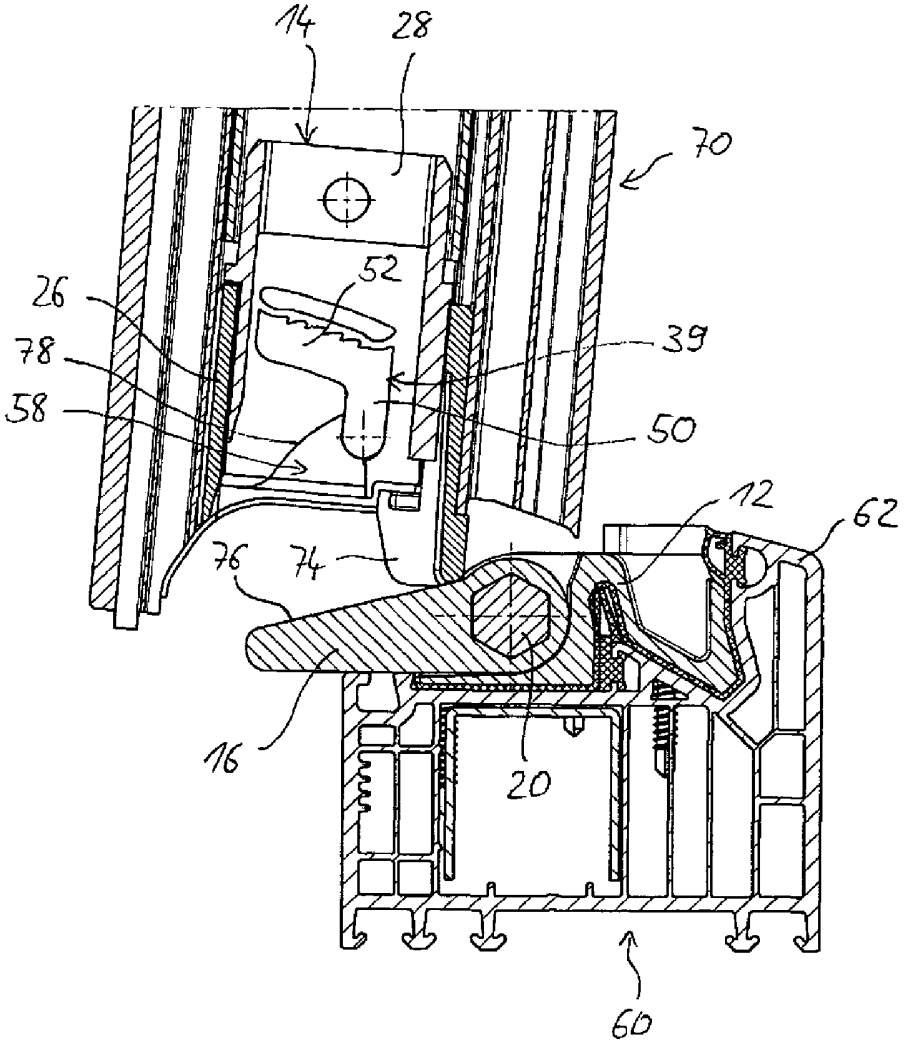


Fig. 7



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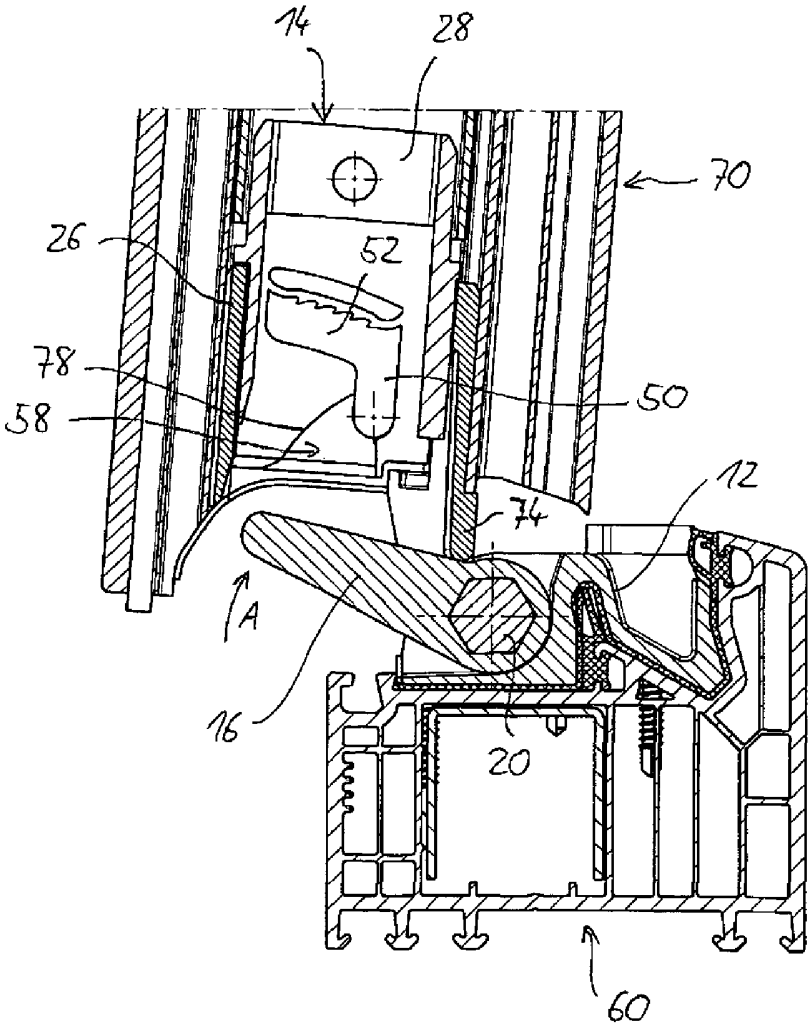


Fig. 9

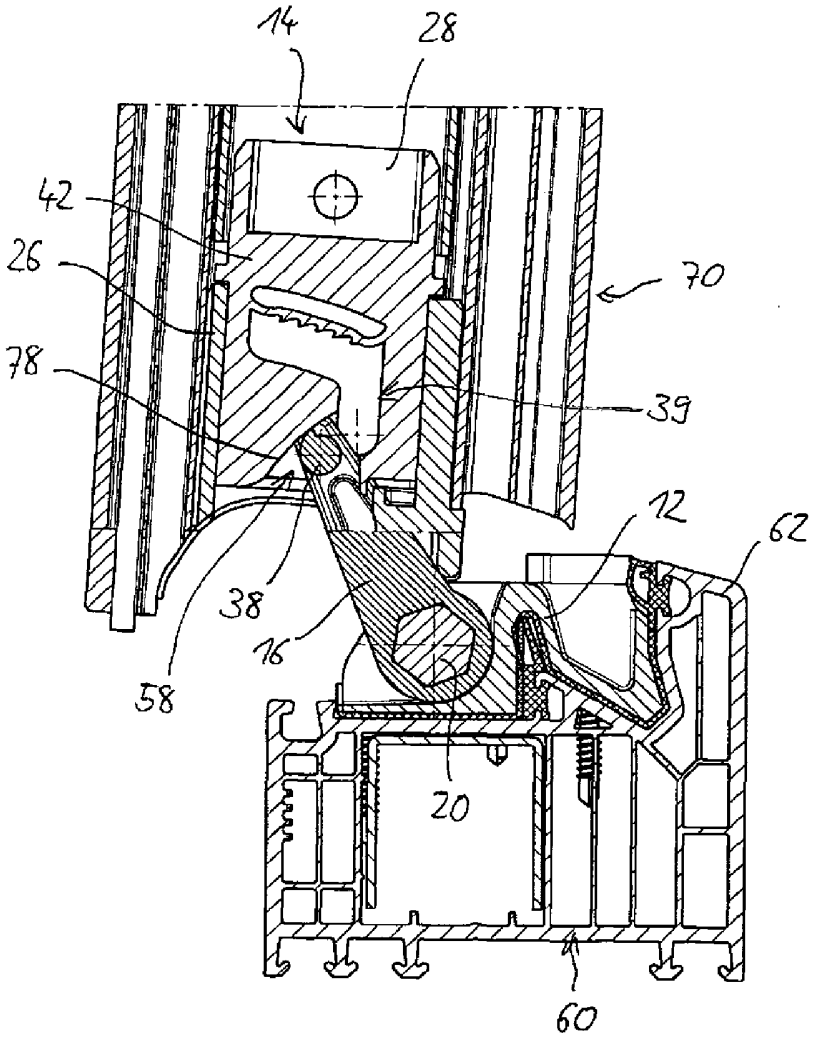


Fig. 10

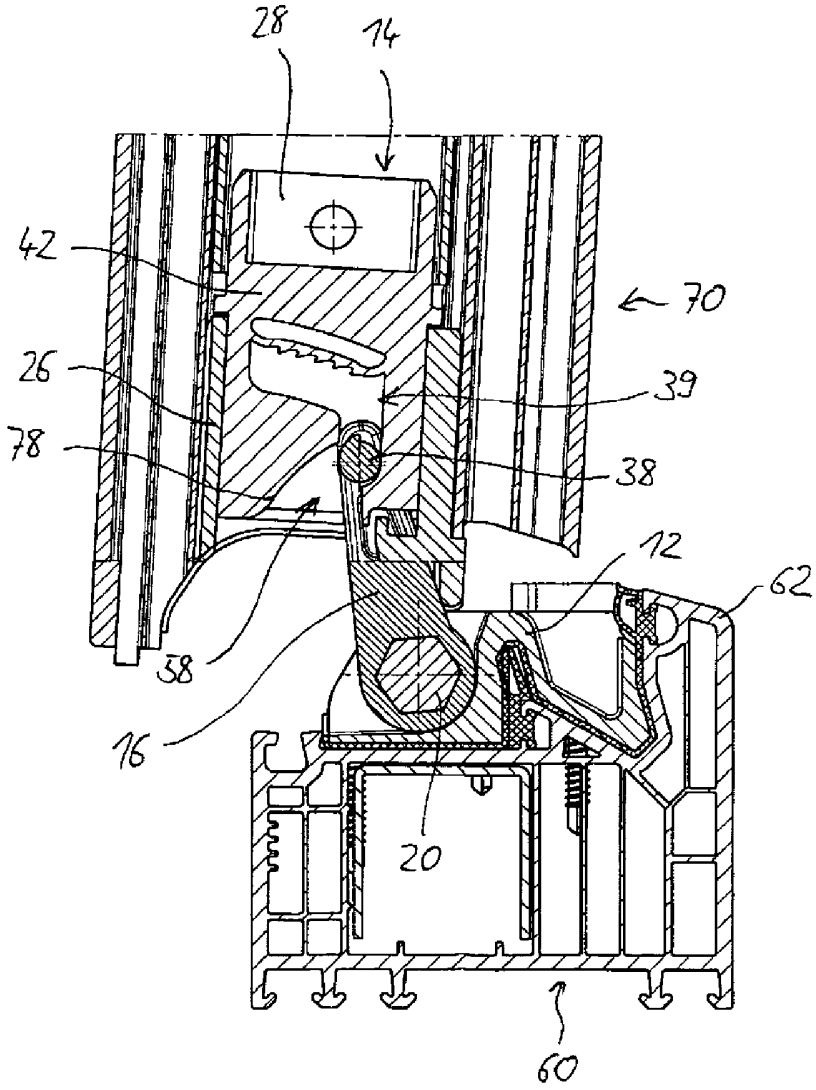
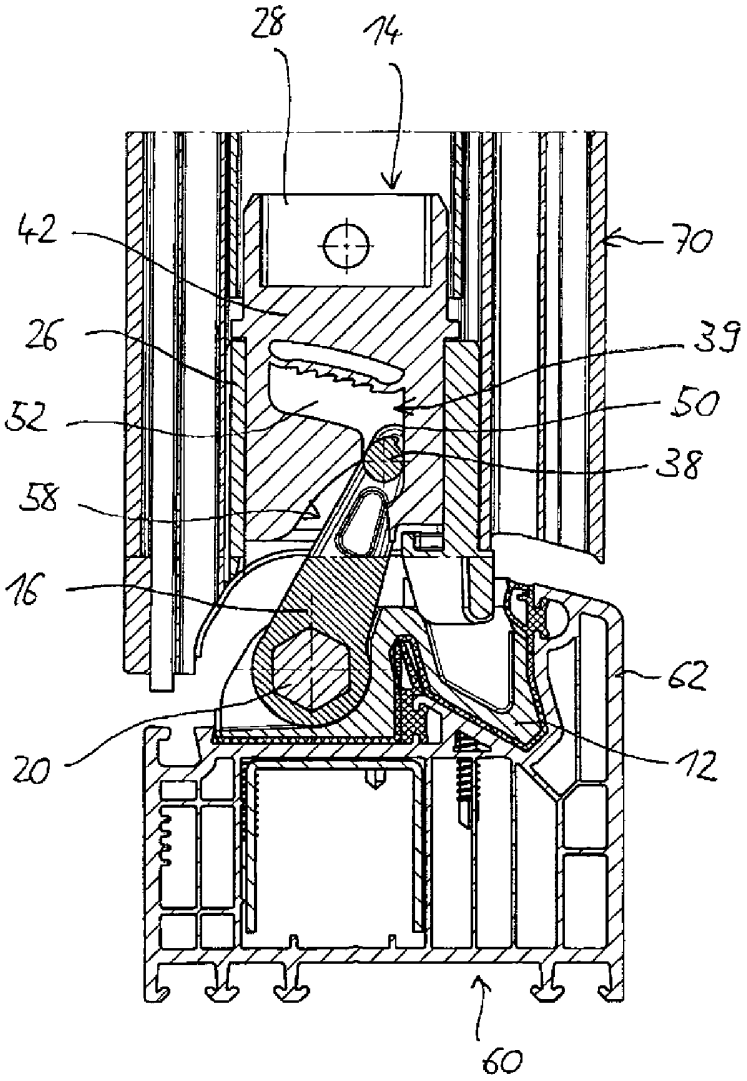


Fig. 11



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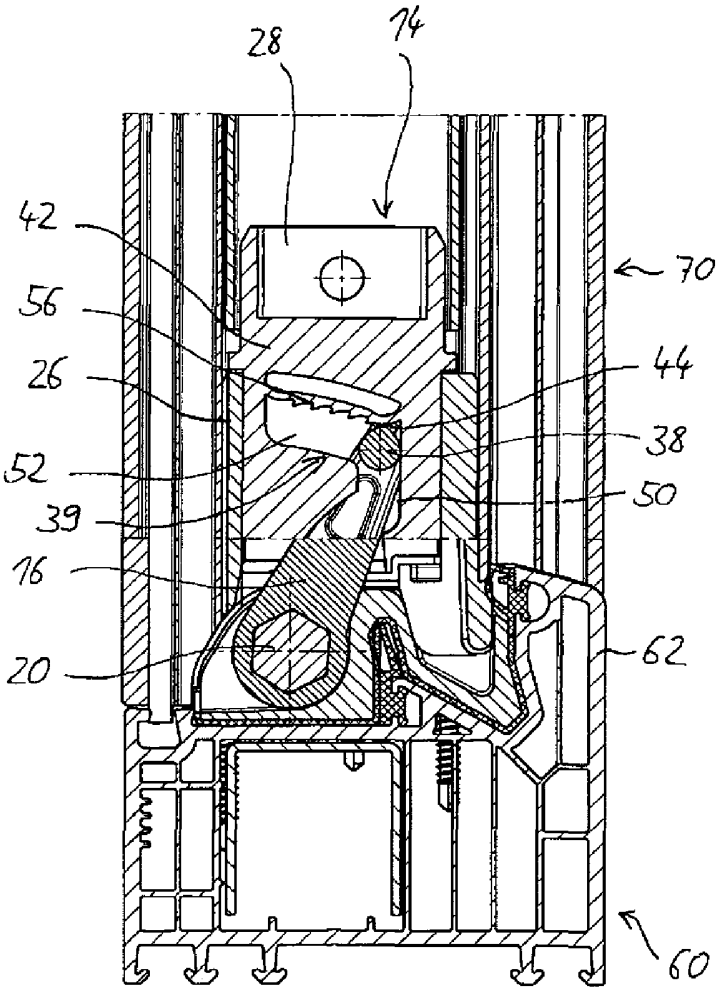
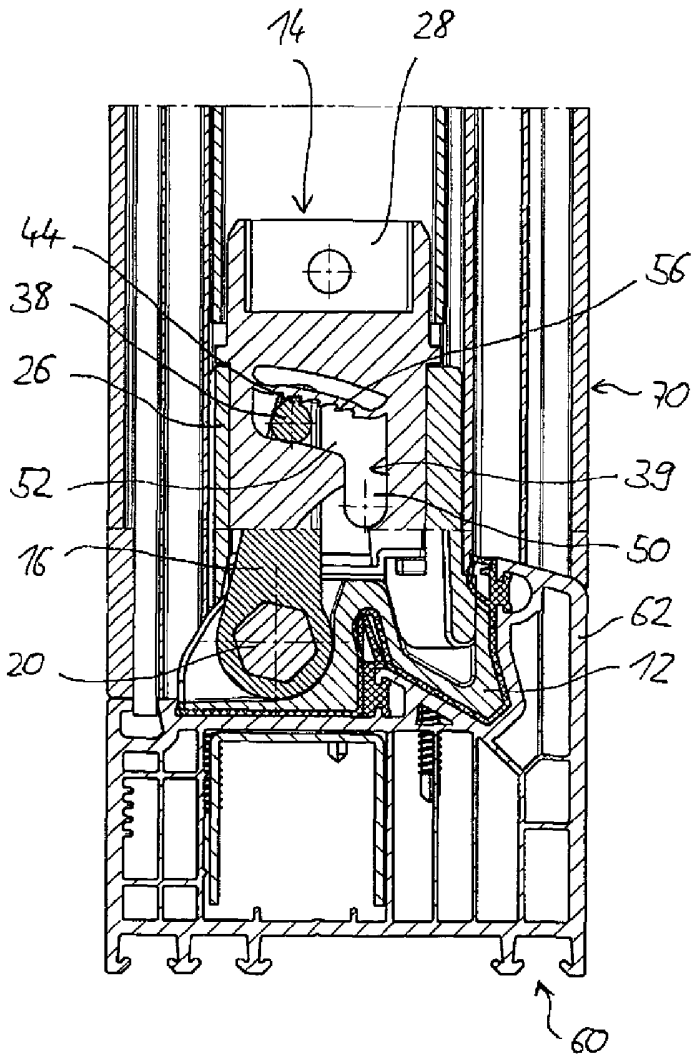


Fig. 13



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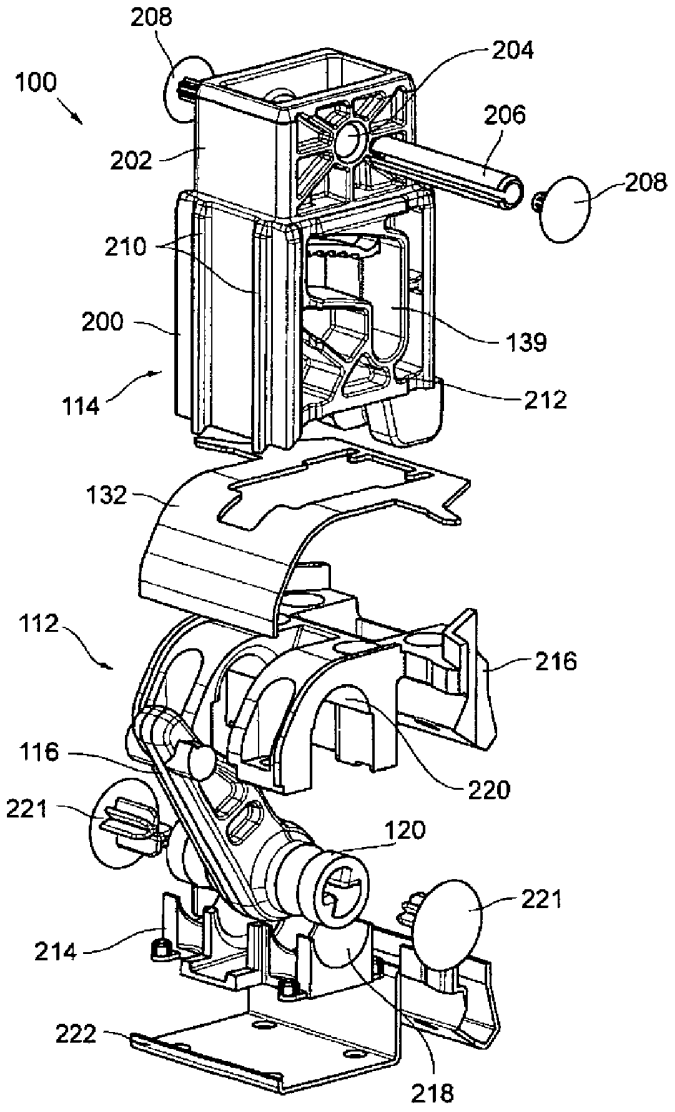
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Fig. 15

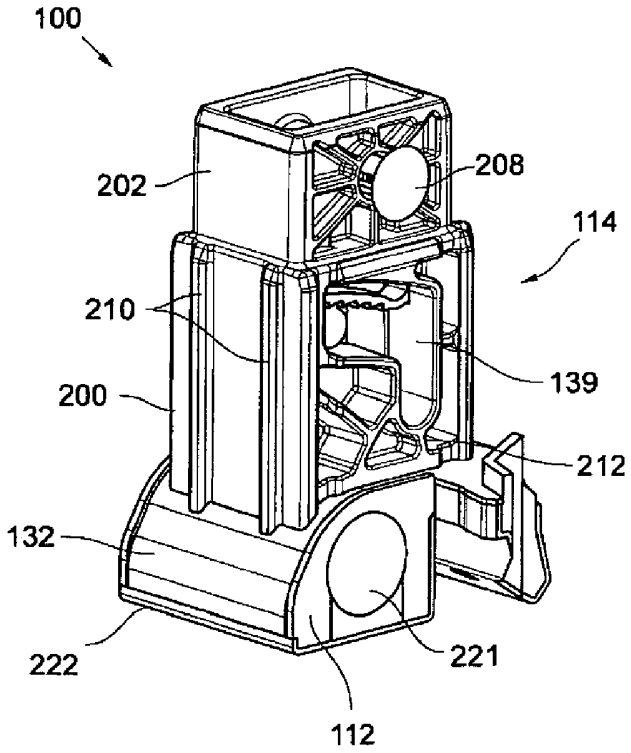

Fig. 16

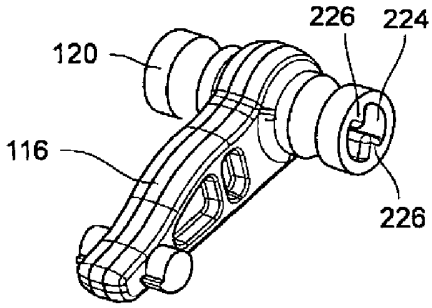

Fig. 17

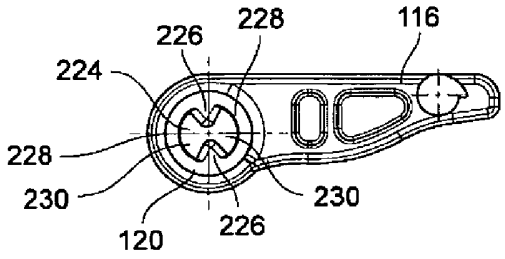

Fig. 18

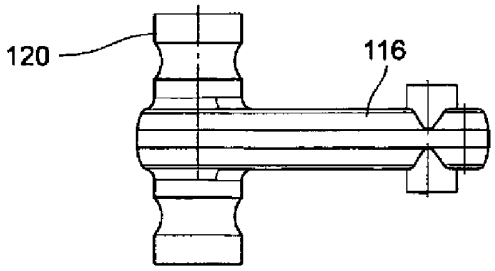

Fig. 19

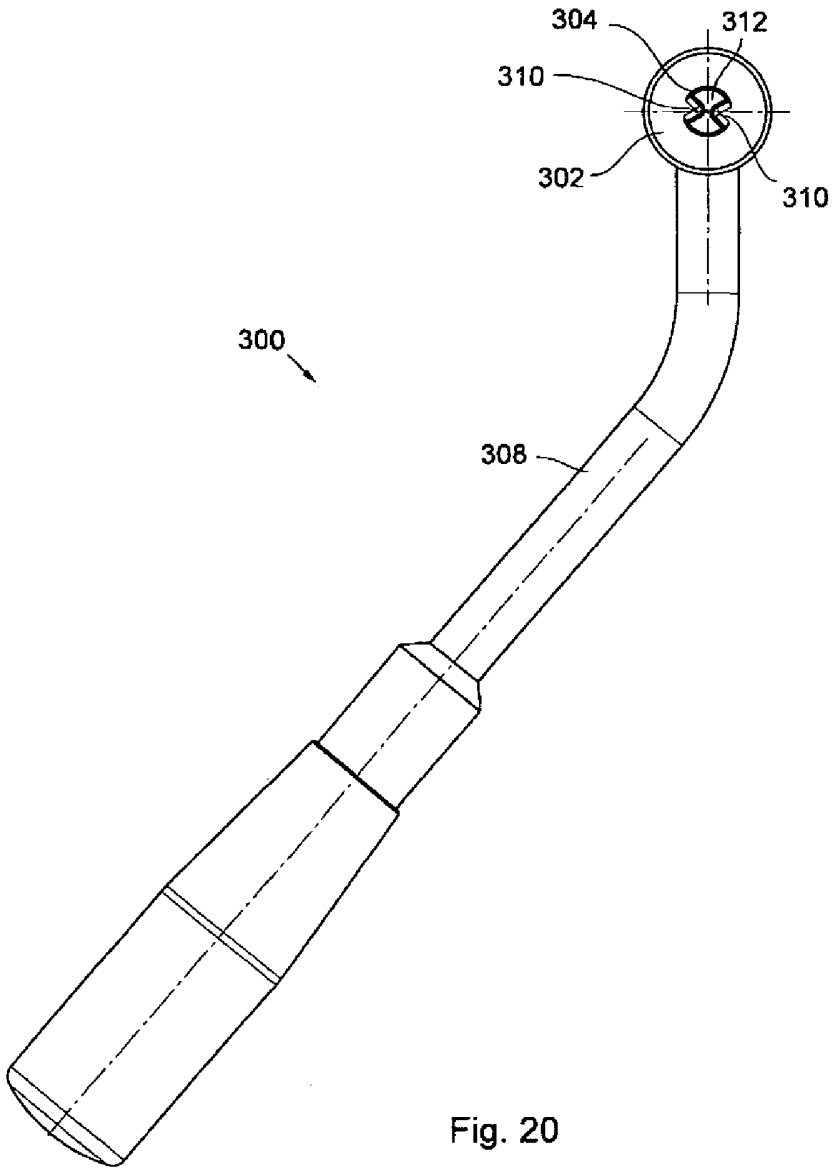

Fig. 20

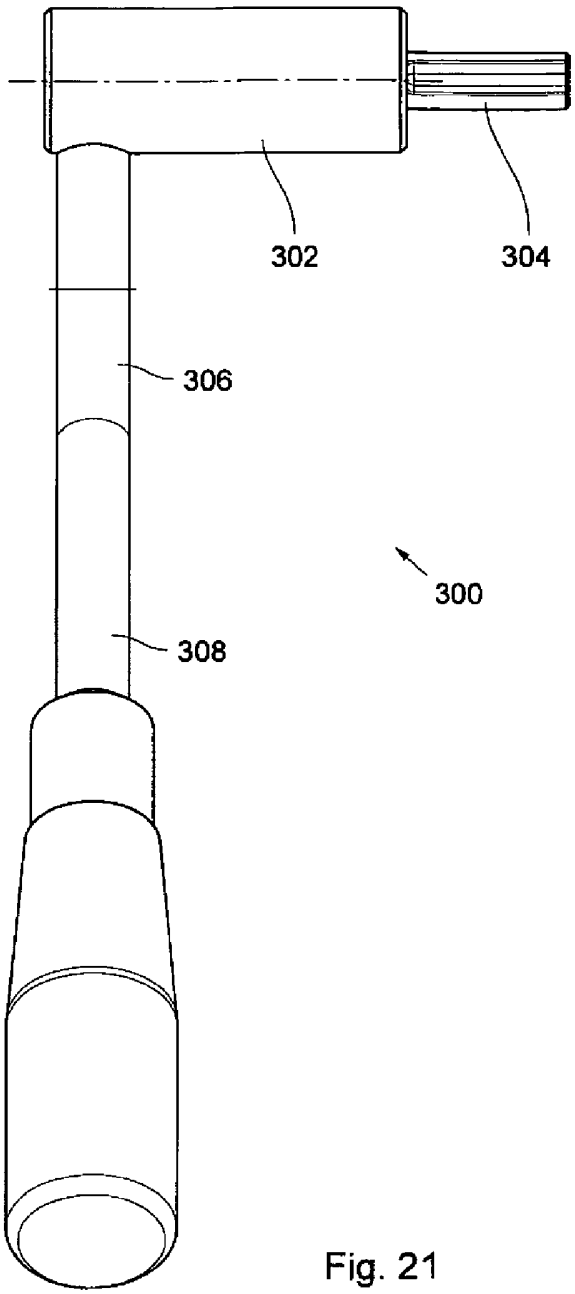

Fig. 21