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(54) Alignment bracket for fixtures

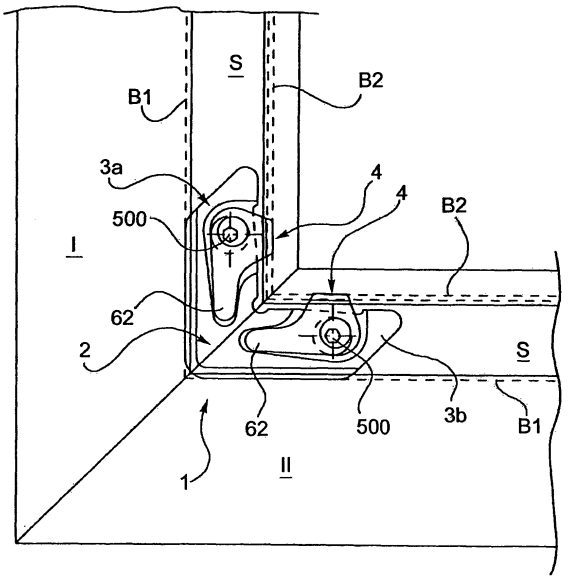
(57) Alignment bracket for fixtures, of the type intended to align a first profile I and a second profile II of a frame for fixtures in a joining zone, each of which is provided with at least one longitudinal groove S delimited by two opposite parallel edges B1, B2.

The alignment bracket 1 comprises: a joining angle-piece 2 having two arms 3a and 3b able to be inserted inside the groove S of the first profile I and the second profile II, respectively, so as to join together the two profiles I, II; and fixing means 4 provided on each arm 3a, 3b and comprising a shaped body 6. The latter is able to move between a releasing position, where said shaped body 6 does not interfere with the groove S so as to leave said arm 3a,3b free to slide inside it, and at least one locking position, where it pushes against a longitudinal edge B2 of the corresponding groove S of one of the two profiles I, II so as to cause the movement of the latter towards the joining zone.

The bracket 1 is characterized in that each arm 3a, 3b is provided with at least one first guide seat 25 for the shaped body 6 and in that the fixing means 4 comprise a pivot 5 which is rotatably inserted inside a through-hole 20 formed in the arm 3a, 3b. The pivot 5 has at a first end 5' a first circular lug 51 eccentric with respect to its axis of rotation Y and projecting from the through-hole 20.

The bracket 1 is also characterized in that the shaped body 6 is engaged with the first circular lug 51 of the pivot 5 and is housed inside the first guide seat 25 so as to move following the rotation of the pivot 5 with a rotary/translatory movement between the releasing position and the locking position.

Fig. 1



EP 1 688 578 A2

Description

Technical sector

[0001] The present invention relates to an alignment bracket for fixtures.

[0002] The alignment bracket in question is principally classifiable within the sector of accessories for fixtures and frames and is used in particular for aligning two profiles of a frame for thermal break fixtures in the joining zone.

Background art

[0003] As is known, the support frame of a fixture, be it made of metal or PVC, generally consists of several profiles which are fixed in pairs at their ends in the corners of the frame by means of suitable connecting means. The latter consist of L-shaped angle-pieces which are made of metal or plastic and are usually known by the name of "force-fitting brackets".

[0004] In more detail, these angle-pieces have two arms which are intended to be slidably inserted inside grooves provided in the profiles and in which one or more seats are formed for the insertion of ordinary fixing means such as screws or bolts. for example. Each angle-piece exerts by means of its arms a pulling force on the two profiles to be joined together so as to bring them into contact against each other. The angle-pieces therefore allow assembly of the various profiles in an adjacent and coplanar manner so as to form the frame.

[0005] In fixtures of the so-called "cold profile" type, the abovementioned angle-pieces perform fully their function, allowing the profiles to be aligned in a near perfect manner along the whole length of the joining zone. In the case, however, of fixtures of the so-called "thermal break" type, these angle-pieces do not always manage to prevent the profiles from splaying slightly in the joining zone. This is due essentially to the fact that the profiles used to form thermal break frames have a cross-section greater than that of the profiles used for cold profile fixtures. These profiles for thermal break fixtures are formed, in fact, by a main portion, which forms the part supporting the profile and intended to be directed outwards, and by a secondary portion, which is connected to the main portion by means of a thickness of heat-insulating material and which forms the part of the fixture intended to be directed inwards. The connecting angle-pieces are mounted for structural reasons in the zone where the main portions of the two profiles are joined together and, therefore, in. a position which is offset from the centre axes of the profiles. Consequently the secondary portions of the profiles are free to splay, albeit only slightly, not being directly fastened together by the angle-pieces.

[0006] Traditionally, this problem has been solved by inserting suitable alignment means in the joining zone of the two abovementioned secondary portions of the profiles. These alignment means consist of connecting parts which are substantially similar to the abovementioned connecting angle-pieces and are usually known by the name of "alignment brackets". In this case also, the connection between these alignment brackets and the profiles is achieved by means of normal fixing means, such as screws and bolts, or, as is envisaged in the more recent solutions, by means of rotating fixing elements incorporated in the arms of the brackets. These rotating fixing elements are able to be forced against the edges of the grooves inside which the bracket is inserted so as to lock it with pressure inside the profiles.

[0007] In greater detail, each of these fixing elements is able to pass from a releasing position, where the element is retracted inside the contour of the arm, leaving the bracket free to move with respect to the profile, into a locking position, where this element projects from the contour and engages by means of interference with the profile, locking the bracket in the desired position.

[0008] A constructional solution of the alignment bracket provided with the abovementioned rotating fixing elements is described, for example, in European patent EP 1043816. Each of the two arms of the bracket has a fixing element rotatably inserted inside a circular seat formed in the said arm. The fixing element consists of a cylindrical body which acts as a rotating pivot inside the abovementioned circular seat and is provided at one end with a tongue projecting perpendicularly from its axis. This tongue, which is formed as one piece with the cylindrical body, is eccentric with respect to the axis of the latter and, consequently, following a rotation of the cylindrical body, is able to pass from a releasing position, where the said tongue is retracted inside the contour of the arm and does not interfere with the profile, into a locking position, where the tongue, projecting from the contour of the arm, is forced against the profile and is able to fix rigidly the bracket to the said profile. During the rotating movement of the tongue it engages with the profile and imparts to it a longitudinal sliding movement which favours alignment with the other profile in the joining zone. The flat tongue portion which is intended to come into contact with the profile is shaped in the manner of an arc of a circumference and is provided with a series of teeth able to increase gripping thereof on the said profile.

[0009] The alignment bracket described in the patent EP 1048816 has the drawback that the thrust exerted by the tongues on the profiles is concentrated substantially in a single point. This adversely affects the stability of engagement of the bracket with the profile and may result, in certain mechanical stress conditions, to gradual loosening of the fixing means and therefore a deviation (or misalignment) of the profiles.

Disclosure of the invention

[0010] In this situation, therefore, an object of the present invention is to eliminate the drawbacks of the

known art mentioned above by providing an alignment bracket for fixtures which ensures more stable engagement with the profiles.

[0011] Another object of the present invention is to provide an alignment bracket for fixtures which is operationally entirely safe and reliable.

[0012] A further object of the present invention is to provide an alignment bracket for fixtures which is simple and inexpensive to produce.

Brief description of the drawings

[0013] The technical features of the invention, in accordance with the abovementioned objects, may be clearly determined from the content of the claims indicated below and the advantages thereof will emerge more clearly from the detailed description which follows, provided with reference to the accompanying drawings, which show a purely exemplary and non-limiting example of embodiment and where:

- Figure 1 shows an alignment bracket for fixtures according to the invention mounted in the zone where two profiles of a frame are joined together;
- Figure 2 shows a plan view of the alignment bracket according to the invention;
- Figure 3 shows a cross-sectional view of the alignment bracket according to Figure 2 along the line III-III of the same Figure;
- Figure 4 shows a plan view of a detail of the alignment bracket according to Figure 1, relating to a pivot;
- Figure 5 shows a cross-sectional view of the pivot according to Figure 4 along the line V-V of the same Figure;
- Figure 6 shows a plan view of a detail of the alignment bracket of Figure 1, relating to a forked element;
- Figure 7 shows a cross-sectional view of the forked element of Figure 6 along the line VII-VII of the same Figure;
- Figure 8 shows a view of a detail of the alignment bracket according to Figure 1, relating to the mechanical connection between the pivot of Figure 4 and the forked element of Figure 6.

Detailed description

[0014] With reference to the accompanying drawings, 1 denotes the alignment bracket for fixtures according to the invention. This bracket 1 is intended, in particular, for the assembly of frames for thermal break fixtures, but may also be used as a force-fitting bracket during the assembly of frames for cold profile fixtures, on its own or in addition to other brackets also of the conventional type.

[0015] Each thermal break profile is composed of a main portion, intended to form the outer surround of the fixture, and a secondary portion, intended to form the inner surround. The two portions are connected together by a further heat-insulating portion. The alignment bracket 1 according to the invention is mounted in the zone where the secondary portions of a first and a second profile I and II of a thermal break frame are joined together with the aim of aligning the two profiles and keeping them in a coplanar relationship. The actual structural connection between the two profiles I and II is performed along their two main portions by means of an ordinary force-fitting bracket (not shown).

[0016] Operationally speaking, the alignment bracket 1 according to the invention is associated with the two profiles at the same time as the force-fitting bracket during assembly of the frame. Each thermal break profile is provided with a special longitudinal groove S formed in the abovementioned inner portion. This groove extends longitudinally along the entire length of the profile I and II and is delimited by two opposite parallel edges, one of which, denoted by B2, is situated closer to the inner side of the profile than the other one denoted by B1.

[0017] The alignment bracket according to the invention consists essentially of a joining angle-piece 2 formed by a flat plate - preferably made of aluminium alloy or possibly steel - and having two mutually perpendicular arms 3a and 3b forming an L-shaped profile. The two arms are intended to be inserted inside the grooves S of the first and the second profile I and II, respectively. This insertion is performed with the profiles separated by means of translatory sliding movement directed longitudinally with respect to the individual profile.

[0018] Once mounted, the bracket 1 is therefore situated astride the joining zone of the two profiles I and II. Each arm 3a and 3b is provided with suitable means 4 for ensuring fixing to the profile, which are able to lock the said arm inside the groove S and at the same time impart to the profile I and II an additional sliding movement towards the joining zone. For this purpose, the fixing means 4 comprise a pivot 5, which is rotatably inserted in each arm 3a, 3b, and a shaped body 6, which is eccentrically connected to the pivot 5 and is inserted inside a first guide seat 25, 26 formed in the arm 3a, 3b. When the pivot 5 rotates, it causes a displacement of the shaped element 6 relative to the arm 3a or 3b. The shaped element 6 has an engaging portion 64 which, following the abovementioned displacement, projects more from the arm and pushes against the edge B2 of the groove S.

[0019] Functionally speaking, the shaped body 6 is able to move between a releasing position 64, where the engaging portion 64 does not interfere with the longitudinal edge B2 so as to leave the arm 3a, 3b free to move inside the groove S, and at least one locking position, where the engaging portion 64 is instead forced against the edge B2 so as to lock the corresponding arm 3a, 3b inside the groove S and draw the profile I, II towards the joining zone with a sliding movement relative to the arm 3a, 3b itself.

[0020] In Figure 2, the fixing means 4 of the arm denoted by 3a are shown arranged in the locking position, while the fixing means 4 of the arm denoted by 3b are shown arranged in the releasing position.

[0021] In greater detail, during the transition from said releasing position into said locking position, the pivot 5 and the connection between the shaped body 6 and the guide seat 25, 26 impart to the engaging portion 64 a rotary/translatory movement which is eccentric with respect to the axis of rotation Y of the pivot 5 and is substantially parallel to the edge B2 of the groove S. During the abovementioned rotary/translatory movement, the engaging portion 64 causes the sliding movement of the profile I, II towards the joining zone in a direction substantially parallel to the edges B, B2 of the groove S. Owing to this movement the engaging portion 64 is brought so as to rest completely against the edge B2 of the groove S, thus ensuring extremely stable fixing of the bracket 1 to the profile.

[0022] Each arm 3a and 3b of the angle-piece 2 has a first side surface 23 in contact with the edge B1 of the groove S and a second side surface 24 which faces the edge B2 and is slightly spaced from the latter owing to the presence of the engaging portion 64 of the shaped body 6.

[0023] In accordance with other embodiments not shown here, the two arms 3a and 3b may also not be mutually perpendicular so as to allow use of the bracket 1 according to the invention also in frames for fixtures forming angles other than right angles.

[0024] In accordance with the preferred embodiment of the invention, constructionally speaking the guide seat 25, 26 mentioned above is formed by means of two inset zones formed in the two sides of the joining angle-piece 2.

[0025] In greater detail, each inset zone extends from the from the second side surface 24 towards the inside of each arm 3a, 3b forming a rounded eyelet 27 substantially parallel to the centre axis X of the said arm.

[0026] Each arm 3a, 3b has a circular through-hole 20 for receiving the pivot 5, which is formed inside the inset zone in a remote position from the eyelet 27.

[0027] In accordance with the preferred embodiment, which can be seen in particular in Figures 4 and 5, the pivot 5 consists of a main cylindrical body 50 which is inserted inside the through-hole 20 so as to rotate about the common axis of rotation Y and is provided at its two ends 5' and 5" with a first and a second cylindrical lug 51 and 52, respectively. These two lugs 51 and 52 are coaxial with each other along an axis Z and are eccentric with respect to the axis Y of the main body 50. When the pivot 5 is inserted inside the through-hole 2, the- two lugs 51 and 52 project from both the sides of the through-hole 20 in the two inset zones formed on the sides of each arm.

[0028] Preferably, the rotation of the pivot 5 occurs over an arc of a circumference and is limited by the interference of a nib 53, provided on the outer surface of the main cylindrical body 50, with two end-of-travel shoulders provided in a groove 28 for receiving the said nib 53, formed adjacent to the hole 20. The nib 23, moving along this groove 28, is able to pass between two end-of-travel positions corresponding to the releasing position and the locking position, respectively, of the engaging portion 64.

[0029] Advantageously, the pivot 5 is provided on at least one of its end surfaces with a coaxial seat 500 envisaged for engagement of a suitable operating tool, such as a screwdriver or a hexagonal-head spanner for example, so as to allow an operator to forcibly rotate the said pivot 5 during assembly of the frame.

[0030] As can be seen from Figures 6, 7 and 8, the shaped body 6 consists preferably of a forked element defined by two parallel flanges 60' and 60" which are connected together by a joining section 70. The latter defines, together with a projecting part, the engaging portion 64 of the shaped body 6. This projecting part of the shaped body 6 has a longitudinal extension in a direction substantially parallel to the edge B2 of the groove and, in particular, to the centre axis X of the corresponding arm, on which the said shaped body 6 is mounted.

[0031] Advantageously, the engaging portion 64 may also be provided with a series of teeth (not shown) able to increase the friction with the edge B2 of the groove S.

[0032] As already mentioned above, the shaped body 6 is mechanically connected to the arm 3a or 3b by means of the pivot 5. For this purpose, each of the two flanges 60' and 60" is provided with a circular opening 68 able to allow form-fitting engagement with the two cylindrical lugs 51 and 52 of the pivot 5.

[0033] In this situation, the two parallel flanges 60' and 60" are inserted inside the two guide seats 25 and 26 of the arm 3a, 3b with the engaging portion 64 projecting from the arm along the second side surface 24 of the latter.

[0034] In greater detail, as can be seen in particular from Figures 2 and 6, each of the two parallel flanges 60' and 60" has an elongated portion 62 which is housed in a guided manner inside the eyelet 27 of the respective guide seat 25, 26.

[0035] Operationally speaking, when the pivot 5 is rotated, the eccentric cylindrical portions 51, 52 on which the shaped body 6 is pivotably mounted impart to the latter a movement guided by the engagement of the elongated parts 62 inside the eyelets 27 of the guide seats 25,26.

[0036] The eccentricity of the cylindrical portions 51, 52, the shape of the guide seats 25,26 and the profile of the shaped body 6 are suitably designed to impart to the engaging portion 64 a rotary/translatory movement having a pressure component perpendicular to the edge B2 and a pulling component parallel to the said edge B2. During this movement the abovementioned engaging portion 64 bears against the edge B2 along the whole of its longitudinal extension.

[0037] Obviously, the guide seat 25,26 may be formed as a single inset zone having any shape suitable for allowing a similar movement of the shaped body 6 without thereby departing from the scope of protection of the present patent.

[0038] During the transition from the releasing position to the locking position, the engaging portion 64 protrudes

towards the edge B2 while remaining substantially parallel to the latter and to the centre axis X of the corresponding arm of the bracket 1. The engaging portion 64 may therefore come into contact with the edge B2 of the groove S, causing the sliding of the associated profile I, II towards the joining zone in a direction substantially parallel to the centre axis X of the corresponding arm 3a, 3b.

[0039] Owing to the rotary/translatory movement imparted to the engaging portion 64 as well as the particular form of the said portion 64, it is possible to obtain a more stable engagement with the profiles than in the cited solutions of the known art and, in particular, the thrusting force may be distributed over a wider area of the edge B2 of the groove S.

[0040] In accordance with a particular solution of the invention not shown in the Figures, the shaped body 6 consists of a single flange 6 which is associated with a single side of the arm of the bracket 1, connected to the pivot 5 via a single eccentric lug of the pivot 5 and housed inside a single guide seat of the arm.

[0041] The invention thus conceived therefore achieves the predefined objects.

[0042] Obviously, it may also assume in its practical embodiment forms and configurations different from that illustrated above without thereby departing from the present scope of the invention.

[0043] Moreover, all the details may be replaced by technically equivalent parts and the dimensions, the forms and the materials used may be of any nature according to requirements.

Claims

1. Alignment bracket for fixtures, of the type intended to align a first profile (I) and a second profile (II) of a frame for fixtures in a joining zone, each of the said profiles (I, II) being provided with at least one longitudinal groove (S) delimited by two opposite parallel edges (B1, B2),
said bracket (1) comprising:

- a joining angle-piece (2) having two arms (3a, 3b) able to be inserted inside the groove (S) of said first profile (I) and said second profile (II), respectively, so as to join together said two profiles (I, II); and
- fixing means (4) provided on each arm (3a, 3b) and comprising a shaped body (6) which is able to move between a releasing position, where said shaped body (6) does not interfere with said groove (S) so as to leave said arm (3a,3b) free to slide inside it, and at least one locking position, where said shaped body (6) pushes against a longitudinal edge (B2) of the corresponding groove (S) of one of said two profiles (I, II) so as to cause the movement of the latter towards said joining zone,

characterized in that each arm (3a, 3b) is provided with at least one first guide seat (25) for said shaped body (6) and **in that** said fixing means (4) comprise a pivot (5) which is rotatably inserted inside a through-hole (20) formed in said arm (3a, 3b), said pivot (5) having at a first end (5') a first circular lug (51) eccentric with respect to its axis of rotation (Y) and projecting from said through-hole (20);
said shaped body (6) being engaged with the first circular lug (51) of said pivot (5) and being housed inside said first guide seat (25) so as to move following the rotation of said pivot (5) with a rotary/translatory movement between said releasing position and said locking position.

2. Alignment bracket for fixtures according to Claim 1, in which said shaped body (6) is provided with an engaging portion (64) where said shaped body (6) grips against the edge (B2) of said groove (S), said shaped body (6) being able to impart to said engaging portion (64) following a rotating movement of said pivot (5) said rotary/translatory movement which is eccentric with respect to the axis of rotation (Y) of said pivot (5) and substantially parallel to said edge (B2), during said rotary/translatory movement said engaging portion (64) causing the sliding movement of said profile (I, II) towards said joining zone.

3. Alignment bracket for fixtures according to Claim 1 or 2, in which said first guide seat (25) is formed on at least one first side (21) of said arm (3a 3b) and extends from a side surface (24) towards the inside of said arm (3a, 3b) forming an eyelet (27) substantially parallel to the centre axis (X) of the said arm.

4. Alignment bracket for fixtures according to any one of the preceding claims, in which said pivot (5) has a coaxial seat (500) for engagement of an operating tool able to impart a rotating movement to said pivot (5).

5. Alignment bracket for fixtures according to any one of the preceding claims, in which said pivot (5) is provided externally with a nib (53) which is inserted in a guided manner inside a groove (28) formed adjacent to said through-hole (20), said nib (53) being able to move inside said groove (28) between two end-of-travel positions corresponding to the releasing position and at least one locking position of said engaging portion (64), respectively.

6. Alignment bracket for fixtures according to Claims 2 and 3, in which each arm (3a, 3b) has a second guide seat (26) formed in a second side (22) parallel to said first side (21),
wherein said pivot (5) has, at a second end (5") op-

posite to said first end (5'), a second circular lug (52) which is eccentric with respect to the axis of rotation (Y) of said pivot (5) and coaxial with respect to said first lug (51), said first lug (51) and said second lug (52) projecting from said through-hole (20) in the region of said first guide seat (25) and said second guide seat (26),
and wherein said shaped body (6) consists of a forked element provided with two parallel flanges (60', 60") which are able to be housed in a guided manner inside said first guide seat (25) and said second guide seat (26) and be rotatably connected with said first circular lug (51) and with said second circular lug (52), said two parallel flanges (60, 60") being connected together by a joining section (70) which defines said engaging portion (64).

7. Alignment bracket for fixtures according to Claim 3, in which said shaped body (6) has at least one elongated portion (62) able to be housed in a guided manner inside said eyelet (27).

8. Alignment bracket for fixtures according to any one of the preceding claims, in which said engaging portion (64) has a series of teeth able to increase the friction with the edge (B2) of said groove (S).

Fig. 1

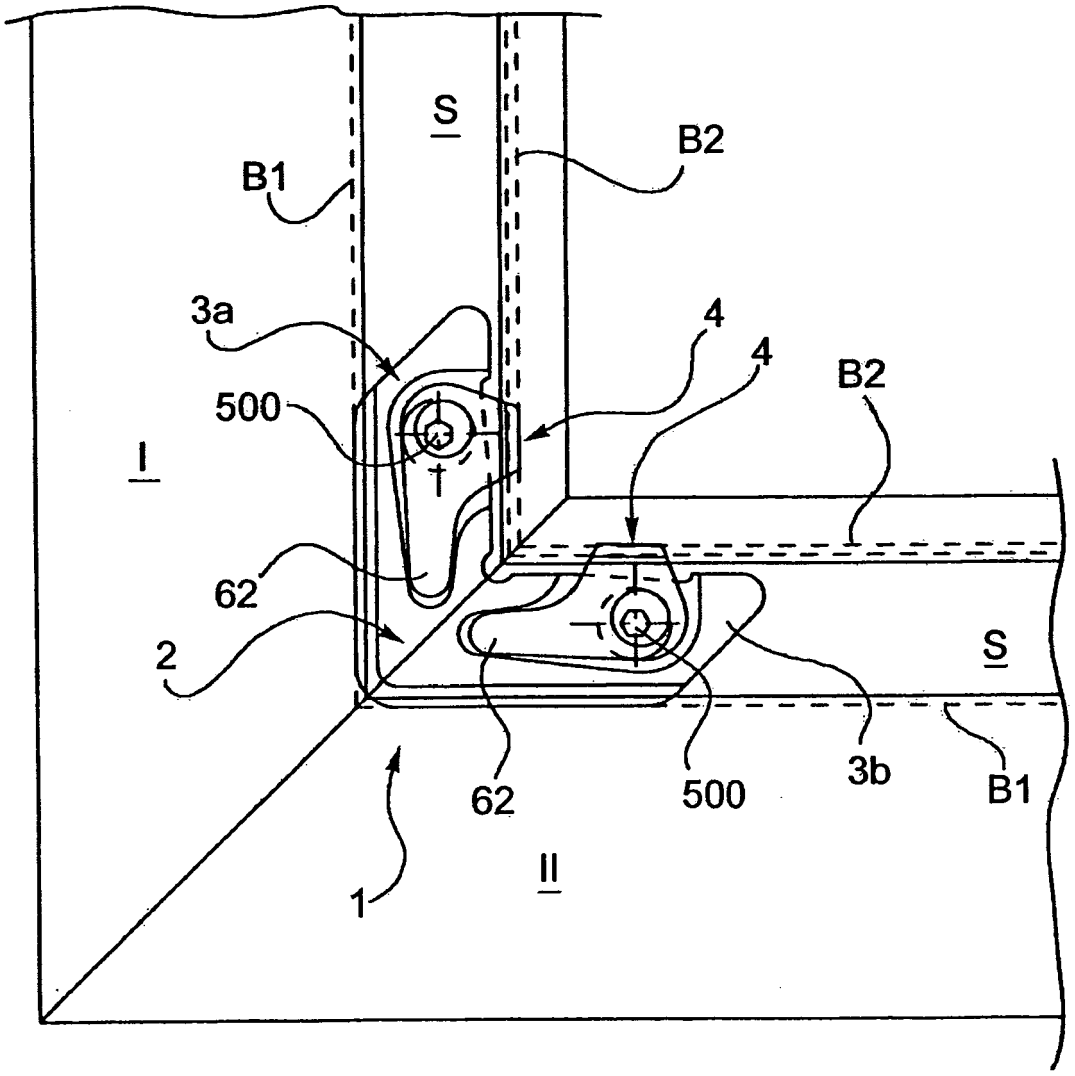


Fig. 2

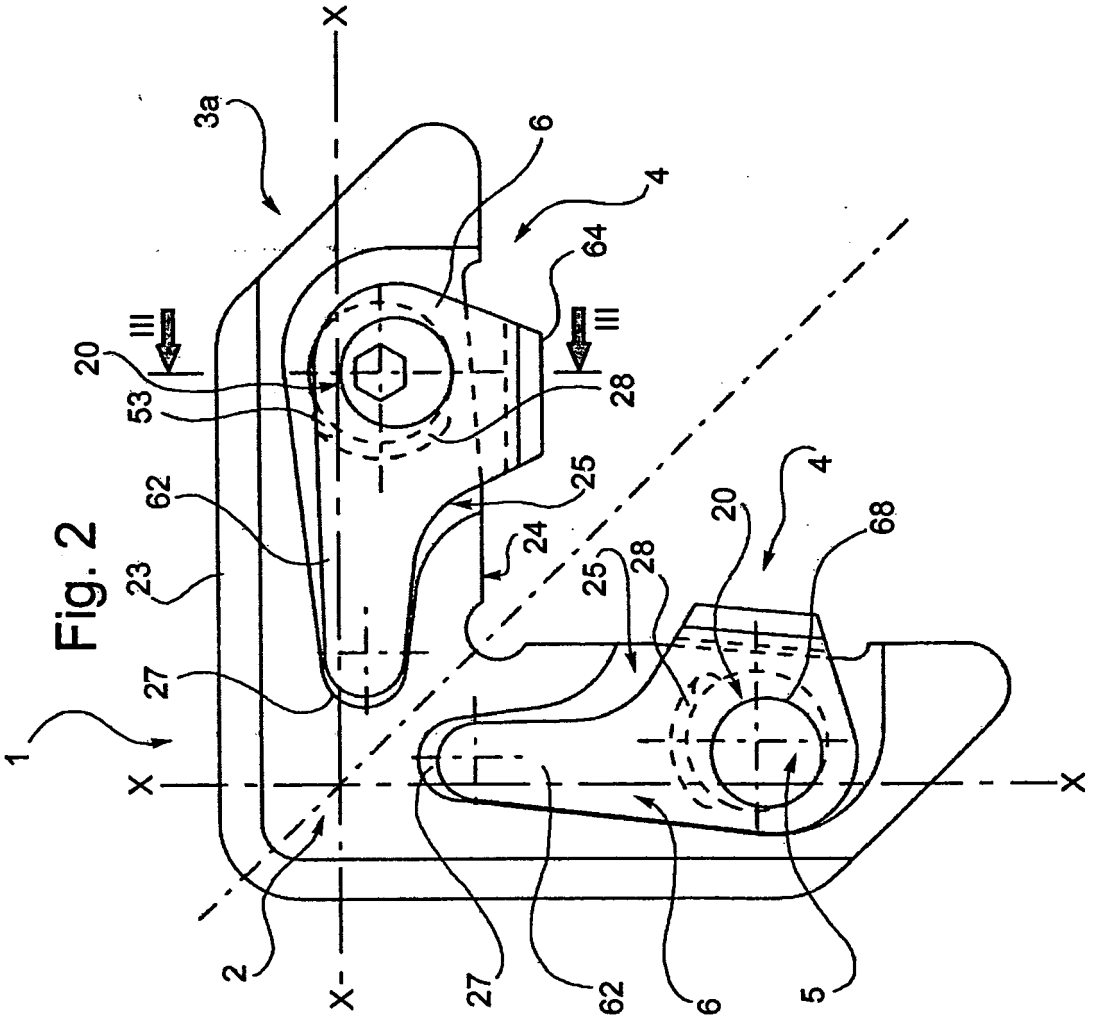

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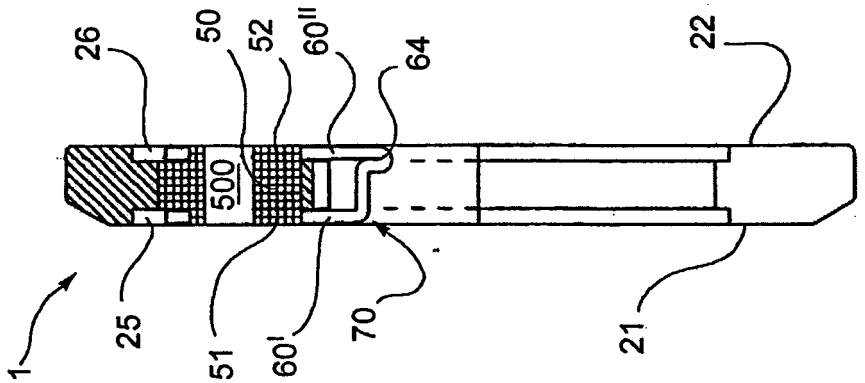
Fig. 3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22
500
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21

Fig. 4

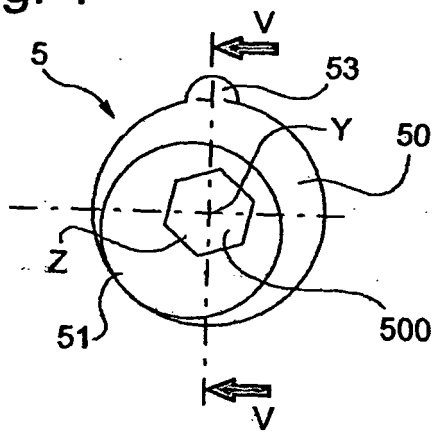

Fig. 5

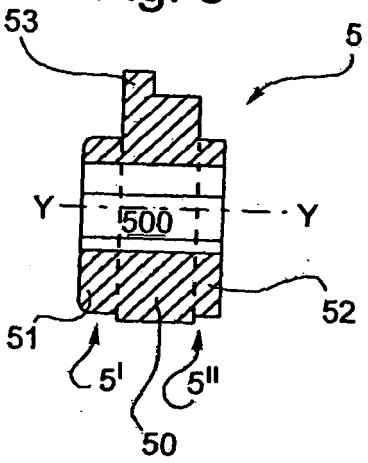

Fig. 6

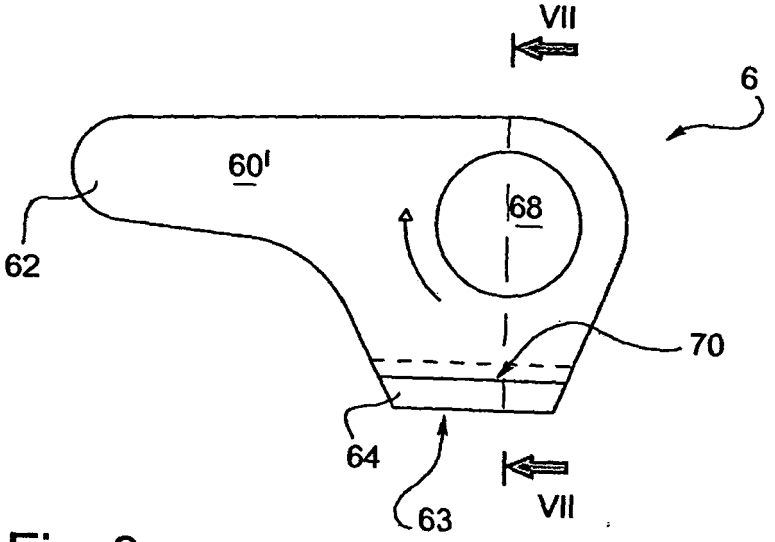

Fig. 8

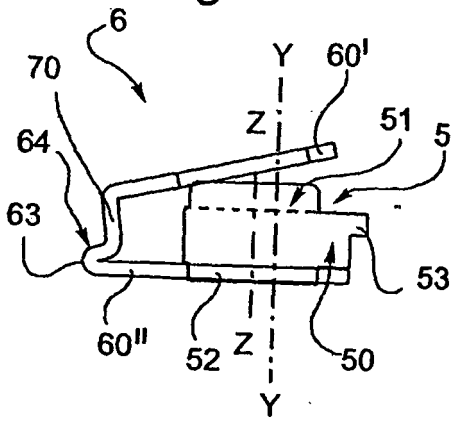

Fig. 7