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(54) **A radiator bracket**

Heizungsklammer

Support de radiateur

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DE-U1- 29 507 200 DE-U1- 29 517 307

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Description

TECHNICAL FIELD

[0001] The present invention relates to a bracket for mounting a radiator on a wall, comprising an anchorage rail for securing on the wall, and first and second engagement members for cooperation with the radiator or an anchorage disposed thereon, the first engagement member being movable and spring-biased by spring means towards the second engagement member.

BACKGROUND ART

[0002] There is a multiplicity of radiator brackets or retainers on the market for securing different types of radiators to walls or floors. A feature common to the prior art types is that they often strive to realise rapid and simple mounting of the radiator, at the same time as they themselves should be concealed by the ready-mounted radiator to as great an extent as possible. Since different radiators have different designs, for example concerning dimensions, but also concerning convector plates, safety grills etc, a bracket that is suitable for the radiator type in question is often delivered together with the radiator. In such instance, it is important that the packaging of the bracket together with the radiator is not excessively bulky, and that the radiator bracket may rapidly and simply be removed from the packaging in order first to be mounted in place on the wall or alternatively the floor. Often, the intention is to position the bracket between convector plates in the radiator or between two panels in a multipanel radiator without the bracket projecting outside. At the same time, it is generally a matter of some importance to keep in place the outer packaging for the radiator proper as long as possible, also once the radiator has been mounted in position, in order to prevent scratches and other damage that could occur to the radiator during the remaining building and construction work.

[0003] A bracket according to the preamble of claim 1 is known from document DE 201 15 976 U.

[0004] EP 294 377, which has been filed by the Applicant in this case, discloses a bracket which has hitherto proved to be popular, because of its relatively simple handling, also when a large number of brackets are required, for example on mounting long and/or heavy radiators.

[0005] Each one of the brackets has a lower support member and an upper engagement member which has an upper locking position from which the upper engagement member may be released in order to grasp around a part of the radiator proper or a retainer device thereon. The bracket is shorter than the height of the radiator, which limits its visibility when the radiator is ready-mounted. The bracket which is described also includes a possibility for locking the bracket against accidental dismounting of the radiator.

[0006] While the prior art bracket functions relatively satisfactorily, it is nevertheless still too long to be pack-

aged together with radiators in a space-saving manner, and it includes several loose parts that may be difficult to assemble on the building site before the radiator can be mounted on the bracket. Consequently, the bracket is often delivered ready-assembled, which makes it more bulky.

PROBLEM STRUCTURE

[0007] There is thus a need in the art to realise a radiator bracket which can be packaged together with that radiator which is to be mounted thereon in a more compact manner and at the same time maintain or preferably improve handling and use of the radiator bracket on mounting on the building site. In such instance, there is also a need to avoid the necessity of handling small loose parts.

SOLUTION

[0008] The objects forming the basis of the present invention will be attained by a bracket according to claim 1.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

[0009] A preferred embodiment of the present invention will now be described in greater detail hereinbelow, with reference, to the accompanying Drawings. In the accompanying Drawings:

Figs. 1 a-b show two view of an anchorage rail included in the bracket;
 Fig. 2 is an exploded view of the parts included in a first engagement member in side elevation;
 Figs. 3a-b are a view straight from behind, hence from the wall side, and a partly "cut-away" view from the side in a first stage of mounting the bracket in place;
 Figs. 4a-b are views corresponding to those of Figs. 3a and b seen in a later stage of the mounting operation;
 Figs. 5a-b are views corresponding to those of Figs. 3a and b of the bracket when the first engagement member is ready-mounted on the rail;
 Figs. 6a-b are views corresponding to those of Figs. 3 and b, where the first engagement member is in an upper, locked position; and
 Fig. 7 is a sectional view straight from the side of the first engagement member when it is about to be secured against accidental dismounting.

DESCRIPTION OF PREFERRED EMBODIMENT

[0010] In the following description of the present inven-

tion, terms such as 'upper' and 'lower' will occasionally be employed. These terms are not to be considered as restrictive of the present invention, but merely serve the purpose of describing the present invention in its commonest position of use, when it is mounted or is about to be mounted on a wall. It is also this position which is shown in Figures. The term 'rear side' is taken to signify that side which is turned to face towards a wall, while 'front' or 'outer' side is taken to signify that side which is turned to face towards the radiator proper.

[0011] Figs. 1a and 1b show the upper and lower ends of a rail 1 which is included in the bracket according to the present invention. The length of the rail 1 is of no consequence to the description of the invention, and a number of different lengths of the rail 1 are fully conceivable in order to match corresponding sizes of the radiators. In such instance, the length of the rail 1 is adapted either to the distance between the upper and lower edges, respectively, of the radiator or between two retainer members on the rear side of the radiator, with which a first and second engagement member engage. It is similarly conceivable that the engagement members cooperate with only one of the retainer devices and either of the upper or lower edges.

[0012] The rail 1 has been given a profile which is quite conventional and previously known in the art. The profile comprises a longitudinal, U-shaped bend 2 at each respective side edge of the rail 1. The bottom, i.e. the rear side of the U-shaped bend 2, abuts against the substrate, i.e. the wall, when the retainer is mounted. A longitudinal, planar web or central portion 3 is located a distance in front of the substrate, i.e. the wall, in the mounted state, and space is thereby created for parts extending through or past the rail 1, towards its rear side facing the wall.

[0013] The rail 1 is, preferably in its longitudinal, planar web portion 3, provided with two or more fixing holes 4 for fixing means which ensure fixing to the substrate. The fixing holes 4 may be greater in number or of different design than that shown in the Figures, depending on different standards in different countries and different materials in the substrate. All fixing holes provided on a rail 1 need not, thus be made use of.

[0014] At the upper end of the rail 1, there are recesses 5 and 6 which make for mounting of a first, upper engagement member 10, which will be described in greater detail hereinbelow.

[0015] At the lower end of the rail 1, there is provided a second engagement member 7 in the form of a plastic tip or ferrule which permits the lower edge or a retainer on the radiator to slide in position in a recess 8 intended therefore, at its lower and outer or forward end. Thus, no exact precision is required on fitting of the lower edge of the radiator or alternatively its lower retainer member on mounting, which facilitates the mounting operation to a considerable extent.

[0016] The upper recess 5 is provided with a transverse recess 9 in which a part 14 of the first engagement member 10 is intended to engage.

[0017] Fig. 2 illustrates in side elevation an exploded view of the parts included in the first engagement member 10. These parts consist of a catch 11 for engagement with the radiator or retainer device mounted thereon, a main portion 12 of the engagement member 10, a spring 13 disposed in the engagement member 10, an abutment 14 for the spring 13 and a screw 15 for realising an anti-dismount guard.

[0018] In the preferred embodiment, the catch 11 is manufactured from metal and grasps about the upper edge of the radiator or a retainer device or the like. In this respect, the design is fully conventional. The catch 11 is disposed to straddle the main portion 12 of the engagement member 10 and, to this end, displays a configuration and dimensions which correspond hereto. The catch 11 is further provided with a slot 16 which permits the first engagement member 10 to be passed down a distance in the recess 5 of the rail 1 and is guidable thereon. The slot 16 is upwardly closed, which, together with other parts of the main portion, prevent the engagement member 10 from sliding too far down on the rail, but this is instead held at its upper end. The catch is also provided with an anchorage lug 17 on either side for engagement with the main portion 12 of the engagement member 10. The anchorage lug 17 is bent on the mounting operation onto the main portion 12 a distance inwards in a specifically provided recess 18 on the main portion 12, for which reason the catch 11 is permanently secured to the upper region of the main portion 12. The shape of the catch 11 is complementary to the shape of the main portion 12 in the region where the catch 11 straddles the main portion 12.

[0019] The main portion 12 of the engagement member 10 is, in the preferred embodiment, manufactured from plastic, preferably by injection moulding or other suitable manufacturing process, which is specifically intended for large-scale production.

[0020] The main portion 12 is in engagement with the rail 1 in such a manner that it is slidable in a recess 5 therein. Longitudinal grooves 19 are provided on either side of the main portion 12 for accommodating the two side edges of the recess 5. When the catch 11 is mounted on the main portion 12, the upwardly closed slot 16 will be disposed adjacent the upper portion of the groove 19.

[0021] The upper side of the upper engagement member 10 has an inclination of approx. 30-45° to the horizontal plane. The greater this inclination is, the greater will be the vertical distance between the upper end of the groove 19 and the highest point of the catch 11. This implies that a greater inclination gives a shorter rail 1 for one and the same radiator dimension. The rail 1 will be less visible the shorter it is. A shorter length of the rail 1 also makes for a simpler packaging of the rail together with the radiator.

[0022] The main portion 12 also has a cavity for accommodating the spring 13. In the view according to Fig. 2, the cavity is however located inside the substantially closed side walls in the main portion 12. The inner cavity

is open both rearwardly towards the rail and forwardly towards the mounted radiator, and will be more clearly apparent in, for example, Figs. 3a, 4a, 5a, etc.

[0023] The inner cavity functions to accommodate the spring 13, while the opening towards the rail 1 functions to accommodate the abutment device 14. The bottom of the inner cavity functions as an additional abutment device for the spring 13.

[0024] A locking means 20, which includes a locking heel 21 and a ramp surface 22, retains the first engagement member 10 when this has been moved to an upper, locked position where the spring 13 is compressed so that it generate a force. When the first engagement member 10 is released from the locked position it is moved downwards by the force from the spring 13. At the same time, the force from the spring also urges the abutment device 14 upwards, which entails that its engagement in the transverse recess 9 is improved, since the abutment device 14 is wedged fast to a greater extent in the recess 9 by a so-called 'jamming drawer effect'.

[0025] Finally, both the catch 11 and the main portion 12 include a vertical hole 27 through the upper region, for receiving the screw 15 so that an anti-dismount guard can be realised. The vertical hole 27 is best apparent from, for instance, Fig. 3a and the sectional view of Fig. 7.

[0026] The spring 13 is a compression spring, which partly enjoys the advantage that it is more economical than a draught spring, and partly permits integration in the upper engagement member 10. This in turn enjoys advantages, on the one hand that the spring is protected and, on the other hand, that the number of parts that needs to be assembled on the building site is reduced. Since the parts illustrated in Fig. 2 are assembled to form a single engagement member 10 on manufacture, the fitter at the building site will only need to combine the rail 1 and the engagement member 10 by a simple manual manoeuvre to obtain a finished radiator bracket. The risk of any loss of parts is markedly reduced, as well as the risk of incorrect assembly. At the same time, there will be realised a bracket that can be packed in a space-saving manner together with the radiator.

[0027] The spring 13 has ends which are suitable to abut against substantially planar surfaces. In the preferred embodiment, its lower end abuts against a first, lower abutment 28 which consists of the lower defining wall in the inner cavity of the main portion 12. The upper end of the spring 13 abuts against a second, upper abutment device 14 and the distance between the first 28 and the second 14 abutments may be varied, as will be apparent from the following description.

[0028] The length of the spring 13 in the non-tensioned state of rest is of the same order of magnitude as or slightly larger than the length of the inner cavity, so that the spring 13 will be slightly compressed between the bottom of the inner cavity, i.e. the first abutment 28, and the second, upper abutment 14. This ensures that the spring 13 is retained within the main portion 12 because of the friction forces between the spring 13 on the one hand and

the first and second abutments 28 and 14, respectively, on the other. Thus, there is no risk that the spring 13 fall out of the main portion 12.

[0029] The second, upper abutment 14 includes a bent plate, preferably of metal, in which are disposed two pairs of lateral slots 23, 24. The upper abutment 14 extends between the rail 1 and the main portion 12 of the upper engagement member 10 and contributes in interconnecting these together, at the same time as it also functions as an abutment for the spring 13. The lateral slots 23, 24 engage, on the one hand with the main portion 12 at its side facing away from the rail where the inner cavity in the main portion 12 is for the most part open outwardly. In such instance, the front lateral slots 23 take up a part of the remaining forward defining wall on either side of the main portion 12. The rear lateral slots 24 facing towards the wall are, in the position of use, in connection with the rail 1 at the edges of the transverse recess 9.

[0030] The thickness of the abutment 14 is such that the rear edge of the transverse recess 9 is in engagement with the surrounding side wall 25 of the abutment 14 in the region of the rear pair of lateral slots 24. While the abutment 14 is insertable and movable in the recess 5 and its transverse recess 9 when the angle between the abutment 14 and the central or web portion 3 of the rail 1 is approximately a right angle, an oblique slant of the angle will entail that it is locked in position. Such an oblique slant is realised by the force from the tensioned spring 13, acting on the front portion of the abutment 14, and the angling which is as a consequence of the fact that the abutment 14 is bent. The upper edges in the transverse recess 9 come into engagement with the surrounding side wall 25, while the lower edges in the transverse recess 9 abut against the rear end portion of the abutment. The oblique slant and the dimensioning of the transverse recess 9, the rear lateral slots 24 on the abutment 14, as well as its thickness also cause an abutment of the edges of the rear lateral slots 24 against the web portion 3 of the rail 1 in the region around the recess 5 on that side facing away from the wall.

[0031] Further, the second, upper abutment 14 has a through-going hole 26 which is advantageously threaded so as to receive the outer end of the screw 15 and thereby fix the abutment 14 in the vertical direction in relation to the first engagement member 10, i.e. so as to prevent it from being slidable in the recess 5 in the rail 1. There is thus realised an anti-dismount guard. The action of the screw 15 on the upper abutment 14 also contributes to maintaining or reinforcing the locking of the abutment 14 in the transverse slot 9, so that the entire fixed, upper engagement member does not come lose from the rail 1.

[0032] Figs. 3 to 7 show different stages of mounting and using the radiator bracket according to the invention. Figs. 3a and b show how the upper engagement member 10 has been applied from above on the rail 1 in that the abutment 14 is inserted in the recess 5, so that the edges of the recess 5 run in both of its lateral slots 24. For this to be possible, the first engagement member 10 must be

angled in relation to the rail 1.

[0033] When the abutment 14 has been moved a distance downwards in the recess 5, the angle between the first engagement member 10 and the rail 1 is reduced, so that the locking device 20 can be moved into the recess 6 below the recess 5. Unlike the recess 5, the recess 6 is not open upwards, which permits the locking device 20 to assume a locked position at the upper edge of the recess 6.

[0034] Figs. 4a and b show the first engagement member 10 in such a position on the rail 1, before having been moved to its position of use.

[0035] Figs. 5a and b show the radiator bracket in the ready-mounted state. The rear slot 24 of the abutment 14 has snapped into the transverse recess 9. As has been described above, an engagement takes place between the edge of the transverse recess 9 and the surrounding side surface 25 of the abutment 14 in the region of the lateral slots 24. When the engagement member 10 has been moved straight upwards from the position illustrated in Figs. 5a and b, the abutment 14 will remain at the same height, i.e. it is as good as fixedly disposed in the transverse recess 9. Granted, the abutment 14 maybe tilted slightly in its position in the transverse recess 9, but it cannot leave this position simply because the engagement member 10 moves upwards or downwards. The spring 13 also contributes in the fixing of the abutment 14 in the transverse recess 9, the spring, because of its compressive force, acting on the forward end of the abutment 14 in an upward direction. As a result, the abutment 14 cannot by itself assume that position which is required in order for it to be able to be released from the transverse recess 9, so that the radiator bracket is dismounted.

[0036] From the ready-mounted state which is shown in Figs. 5a and b, the engagement member 10 is movable in an upward direction, i.e. in a direction which realises a compression of the spring 13 when the abutments 14 and 28 approach one another.

[0037] When the spring 13 is greatly compressed, as shown in Figs. 6a and 6b, the engagement member 10 has been moved so far upwards that the ramp surface 22 of the locking device 20 has passed over the upper edge of the recess 6 and snapped into the lower end of the recess 5. In this position, the engagement member 10 can no longer move upwards, since the locking heel 21 now abuts against the upper edge of the recess 6. The angling of the ramp surface 22 also prevents the engagement member 10 from moving downwards.

[0038] The position illustrated in Figs. 6a and 6b is advantageously employed when the rail 1 has been mounted on the wall, and a radiator is just about to be disposed on one or more such rails 1. All engagement members are, in this instance, moved upwards to the position shown in Figs. 6a and 6b. This position may be considered as a preparatory position before the engagement between the radiator bracket and the radiator proper. The lower edge of the radiator, or the lower edge of a retainer

device is thereafter supported in the lower engagement members 7. The radiator is caused to assume its upright position, and is possibly adjusted in the lateral direction on the lower engagement members 7. When the fitter is satisfied with the position of the radiator, one engagement member 10 at a time is snapped into engagement with the radiator. This takes place in that the first, upper engagement member is given a nudge, substantially in the direction of the arrow A in the area of the catch 11, so that the engagement member 10 is brought to a pivotal movement about the upper edge of the rail 1. In such instance, the ramp surface 22, which is of limited height, loses its engagement with the lower edge of the recess 5, and the engagement member 10 is movable downwards under the action of the force from the spring 13. When the upper edge of the radiator comes into abutment against the catch 11, the downward movement of the engagement member 10 is arrested, even if the locking heel 21 has not reached its lowermost position in the recess 6.

[0039] In order to prevent the radiator from unintentionally coming loose from the engagement member 10, in that this is moved upwards in the event of a jolt against the engagement member or against the radiator, a screw 15 is, as was mentioned above, be disposed in the hole 27 in the upper engagement member 10 and the hole 26 in the abutment 14. In such instance, the main portion 12 of the engagement member 10 is fixed in relation to the abutment 14, which in turn is fixed in the transverse recess 9, in accordance with that described above. The anti-dismount guard which is hereby created and which is shown in Fig. 7, can quite simply be released when necessary by using a screwdriver. The provision of the screws also realises a stronger fixing of the abutment 14 in the transverse recess 9.

[0040] The present invention may be modified further without departing from the scope of the appended Claims.

Claims

1. A bracket for mounting a radiator on a wall, comprising an anchorage rail (1) for securing on the wall, and first (10) and second (7) engagement members for cooperation with the radiator or an anchorage disposed thereon, the first engagement member (10) being slidable in a recess (5) of the anchorage rail (1) and spring-biased by a compression spring (13), which is disposed inside the first engagement member (10), towards the second engagement member (7), the first engagement member (10) includes a first abutment device (28) which is movable together with the first engagement member (10) and a second abutment device (14) which is fixably disposed, on the anchorage rail (1), wherein the compression spring (13) is disposed between the two abutment devices, **characterised in that** the first engagement

member (10) is fixable in the second abutment device by fixing means (15) so that protection against lifting-off is realised for a mounted radiator, wherein the fixing means comprises a screw (15) which extends through an end portion of the first engagement member (10) and into the second abutment device (14) for mutual fixing thereof.

2. The bracket as claimed in Claim 1, **characterised in that** the second abutment device (14) extends from the anchorage rail (1) and into a space in the first engagement member (10) substantially transversely of the direction of the anchorage rail (1).
3. The bracket as claimed in Claim 2, **characterised in that** the first abutment device includes an inner surface in the space in the first engagement member (10).
4. The bracket as claimed in any of Claims 1 to 3, **characterised in that** the second abutment device (14) is fixed in a recess in the anchorage rail (1).

Patentansprüche

1. Halterung zur Befestigung eines Heizkörpers an einer Wand, die eine Verankerungsschiene (1) zum Sichern an der Wand und ein erstes (10) und ein zweites (7) Eingriffsglied zum Zusammenwirken mit dem Heizkörper oder einer daran angeordneten Verankerung umfasst, wobei das erste Eingriffsglied (10) in einer Vertiefung (5) der Verankerungsschiene (1) verschiebbar ist und durch eine Druckfeder (13), die in dem ersten Eingriffsglied (10) angeordnet ist, zu dem zweiten Eingriffsglied (7) hin vorgespannt wird, wobei das erste Eingriffsglied (10) eine zusammen mit dem ersten Eingriffsglied (10) bewegbare erste Anlagevorrichtung (28) und eine fest angeordnete zweite Anlagevorrichtung (14) an der Verankerungsschiene (1) umfasst, wobei die Druckfeder (13) zwischen den beiden Anlagevorrichtungen angeordnet ist, **dadurch gekennzeichnet, dass** das erste Eingriffsglied (10) durch Fixierungsmittel (15) dahingehend in der zweiten Anlagevorrichtung fixierbar ist, einen Schutz gegen Ablösung für einen befestigten Heizkörper zu bieten, wobei das Fixierungsmittel eine Schraube (15) umfasst, die sich durch einen Endabschnitt des ersten Eingriffsglieds (10) und in die zweite Anlagevorrichtung (14) zur Fixierung davon aneinander erstreckt.
2. Halterung nach Anspruch 1, **dadurch gekennzeichnet, dass** sich die zweite Anlagevorrichtung (14) von der Verankerungsschiene (1) und in einen Raum in dem ersten Eingriffsglied (10) im Wesentlichen quer zur Richtung der Verankerungsschiene (1) erstreckt.

3. Halterung nach Anspruch 2, **dadurch gekennzeichnet, dass** die erste Anlagevorrichtung eine innere Fläche in dem Raum in dem ersten Eingriffsglied (10) umfasst.

4. Halterung nach einem der Ansprüche 1-3, **dadurch gekennzeichnet, dass** die zweite Anlagevorrichtung (14) in einer Vertiefung in der Verankerungsschiene (1) fixiert ist.

Revendications

1. Support pour l'installation d'un radiateur sur un mur, comprenant un rail d'ancrage (1) destiné à être assujéti au mur, et des premier (10) et second (7) éléments d'accouplement destinés à coopérer avec le radiateur ou un élément d'ancrage disposé sur celui-ci, le premier élément d'accouplement (10) pouvant coulisser dans un évidement (5) du rail d'ancrage (1) et étant sollicité par ressort par le biais d'un ressort de compression (13), qui est disposé à l'intérieur du premier élément d'accouplement (10), en direction du second élément d'accouplement (7), le premier élément d'accouplement (10) comprenant un premier dispositif de butée (28) qui est mobile conjointement avec le premier élément d'accouplement (10) et un second dispositif de butée (14) qui est disposé de manière fixe sur le rail d'ancrage (1), le ressort de compression (13) étant disposé entre les deux dispositifs de butée, **caractérisé en ce que** le premier élément d'accouplement (10) peut être fixé dans le second dispositif de butée par le biais d'un moyen de fixation (15) de façon à mettre en oeuvre une protection contre un décrochage pour un radiateur installé, le moyen de fixation comprenant une vis (15) qui s'étend à travers une partie d'extrémité du premier élément d'accouplement (10) et dans le second dispositif de butée (14) à des fins de fixation mutuelle de ceux-ci.
2. Support selon la revendication 1, **caractérisé en ce que** le second dispositif de butée (14) s'étend à partir du rail d'ancrage (1) et dans un espace dans le premier élément d'accouplement (10) de manière essentiellement transversale vis-à-vis de la direction du rail d'ancrage (1).
3. Support selon la revendication 2, **caractérisé en ce que** le premier dispositif de butée comprend une surface intérieure dans l'espace dans le premier élément d'accouplement (10).
4. Support selon l'une quelconque des revendications 1 à 3, **caractérisé en ce que** le second dispositif de butée (14) est fixé dans un évidement dans le rail d'ancrage (1).

Fig 1a

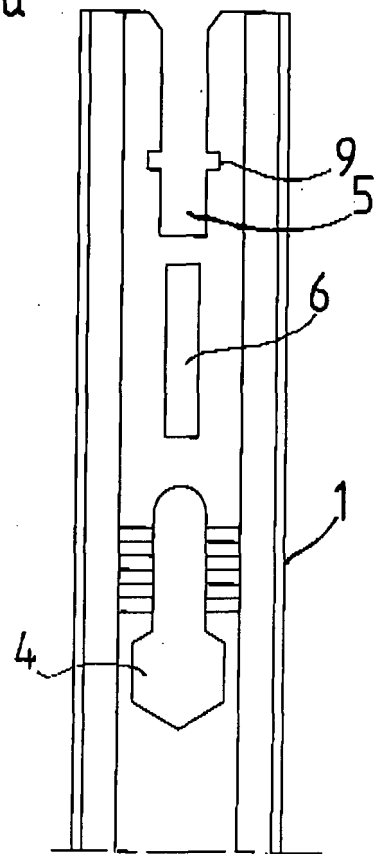


Fig 1b

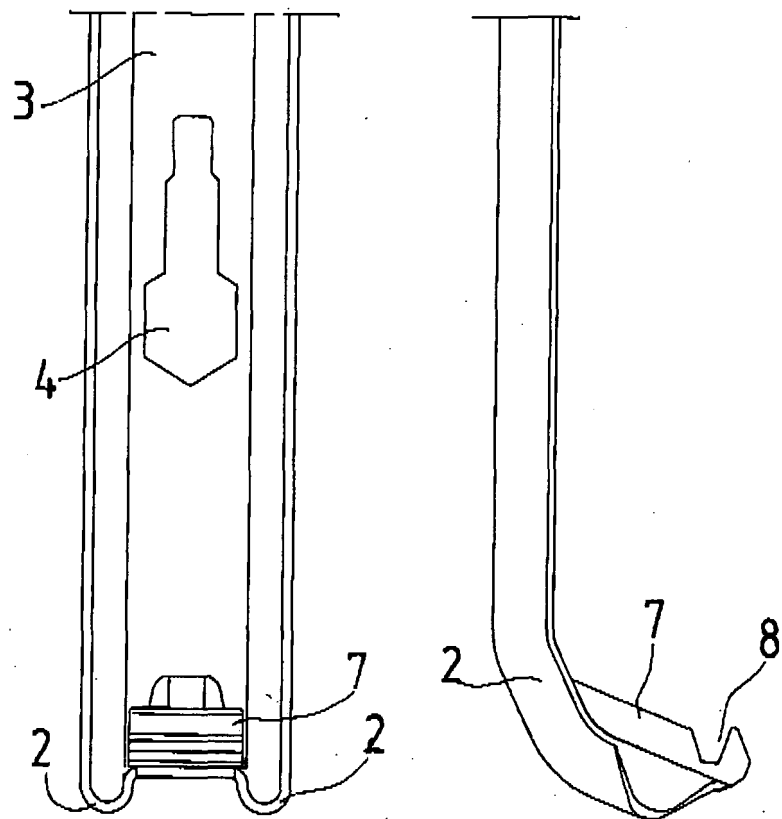


Fig 2

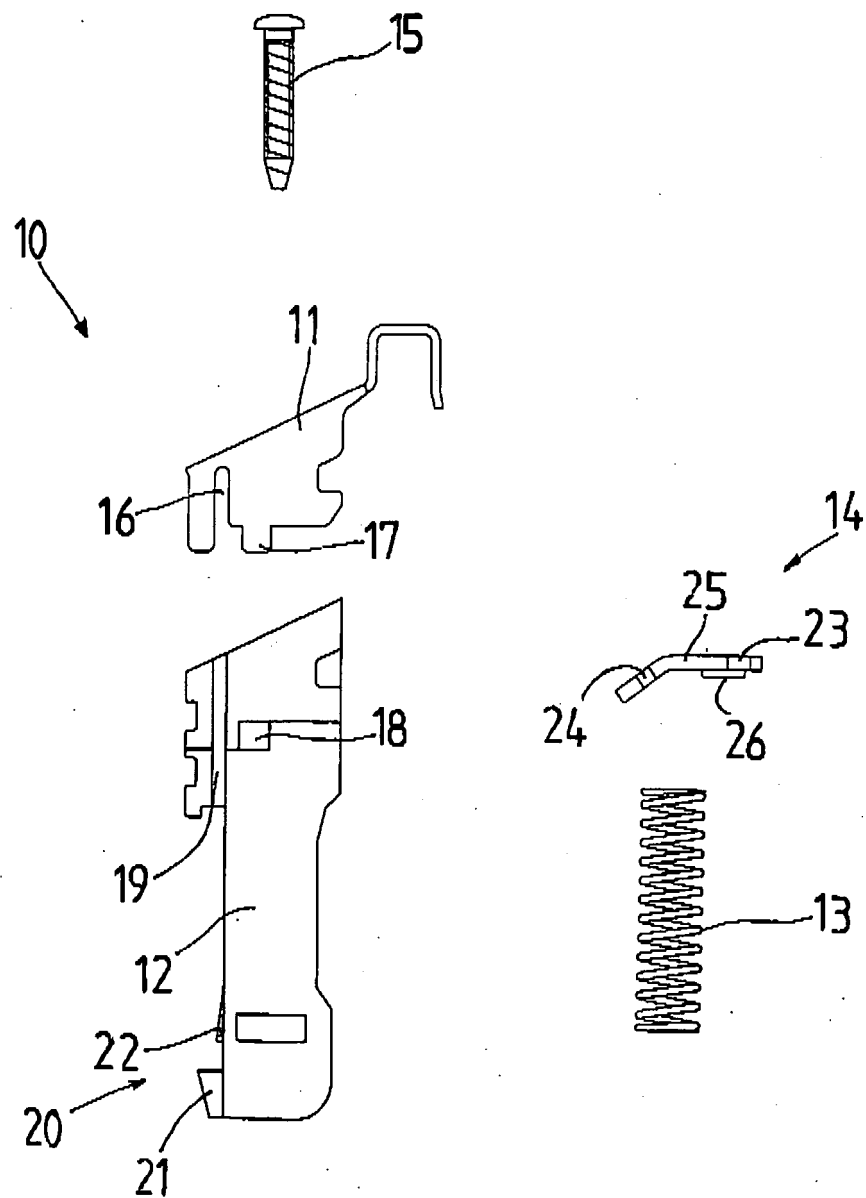


Fig 3a

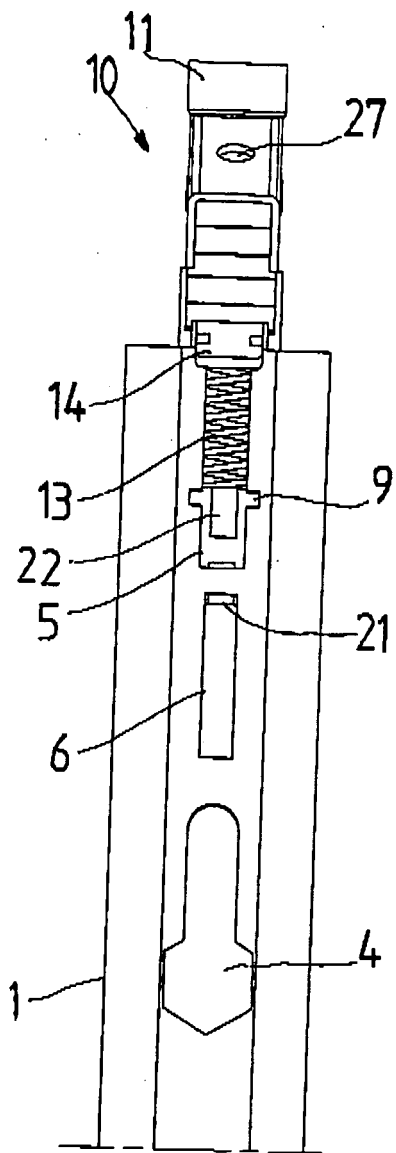


Fig 3b

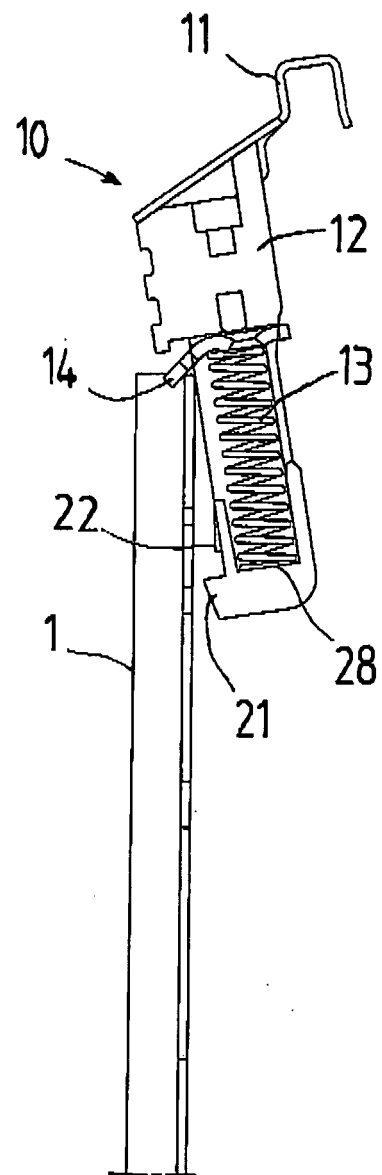


Fig 4a

Fig 4b

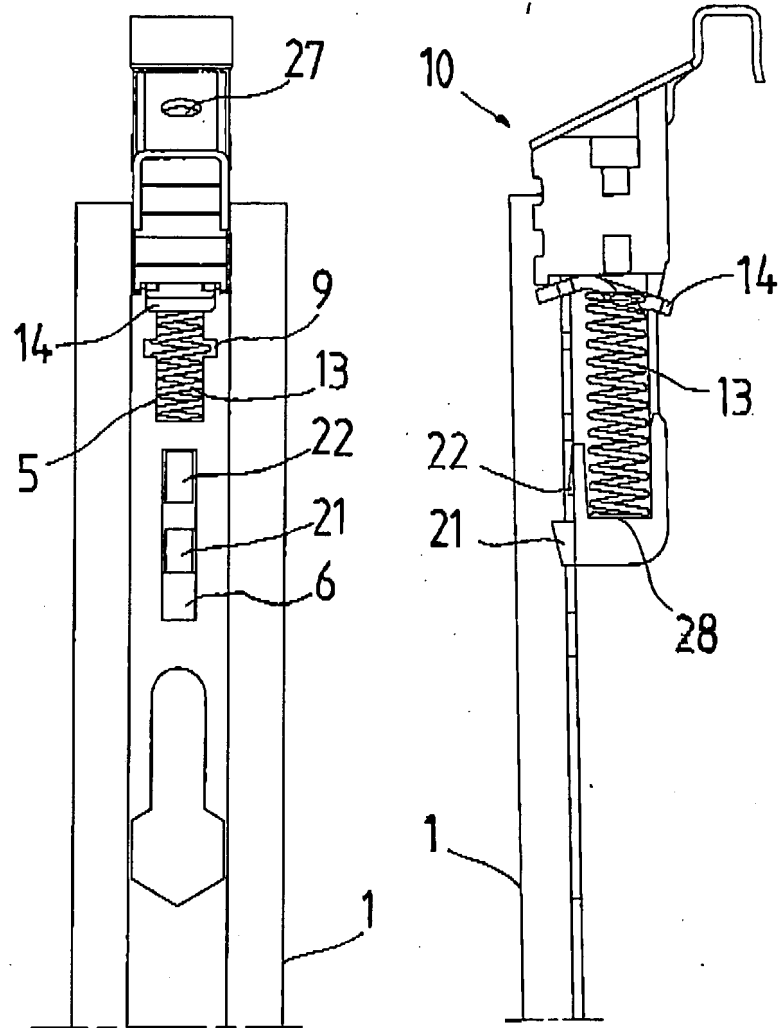


Fig 5a

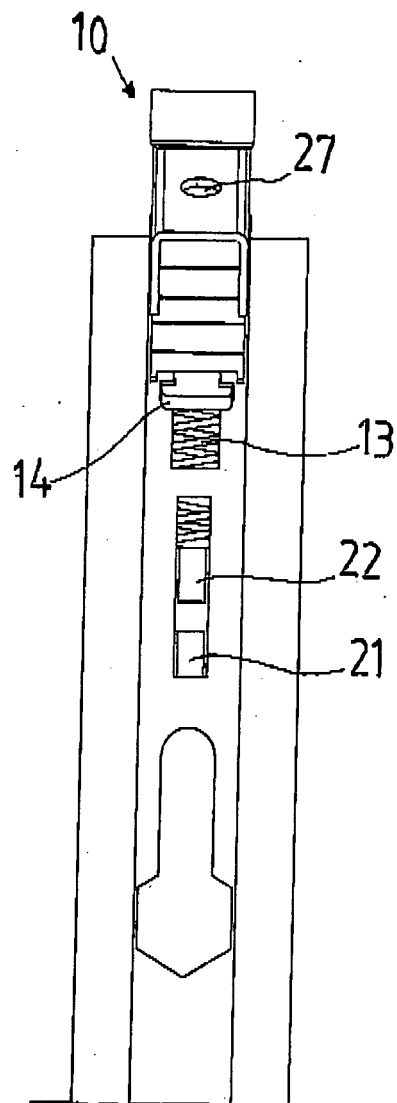


Fig 5b

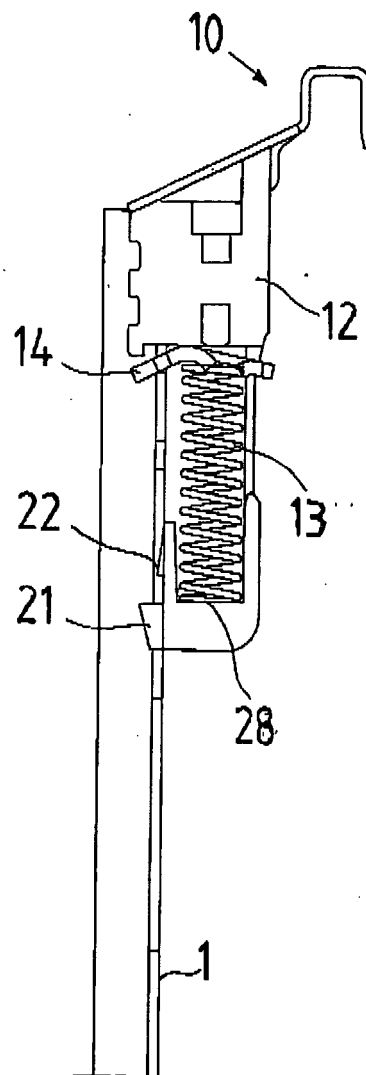


Fig 6a

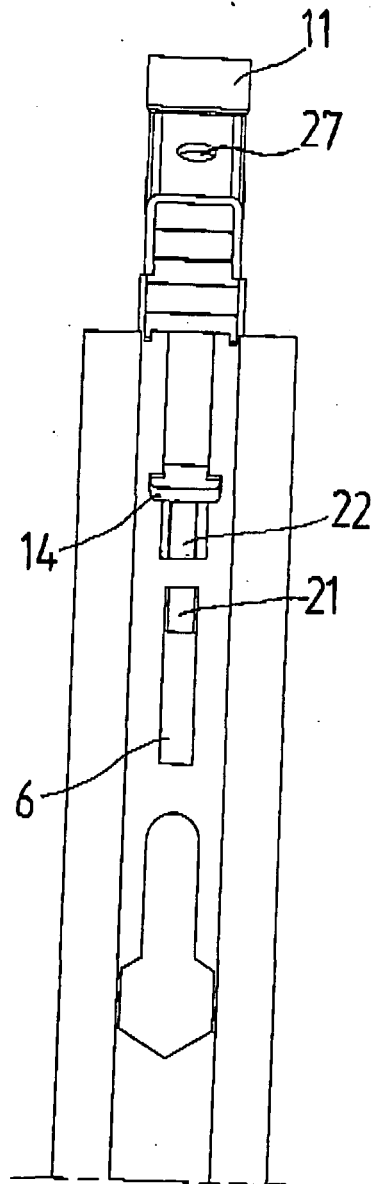


Fig 6b

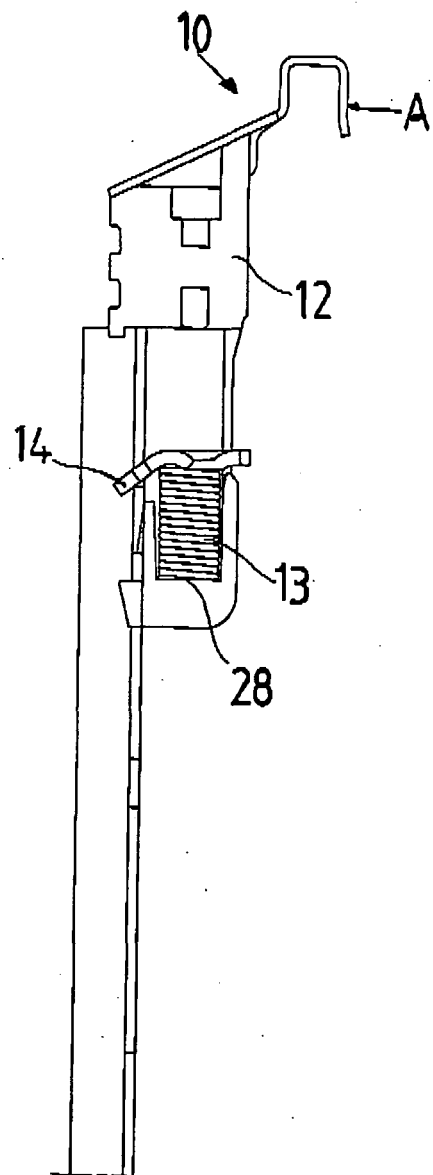
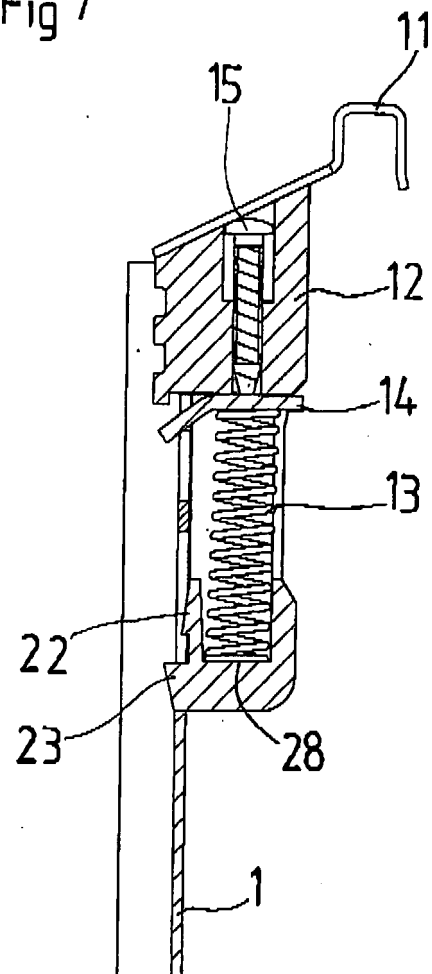


Fig 7



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 20115976 U [0003]
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