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(54) Console assembly

Konsoleneinrichtung
Dispositif de console

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• **Evers, Hermanus Johannus Josef
7558 TR Hengelo (NL)**

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(74) Representative: **Verdijck, Gerardus et al
Arnold & Siedsma
Sweelinckplein 1
2517 GK Den Haag (NL)**

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(73) Proprietor: **JORDAHL/normteq B.V.
7559 SP Hengelo (NL)**

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(72) Inventors:
• **Istha, Johannis
3571 PJ Utrecht (NL)**

Description

[0001] The present invention relates to a bracket assembly according to the preamble of Claim 1.

[0002] Bracket assemblies in which the fixing member consists of a plate section folded over into a U-shape, as a result of which two plate sections located some distance apart are obtained, are disclosed in the prior art. An anchoring bolt, such as a T-head bolt, can be positioned at a level between the plate sections. The various parts are possibly adjusted with the aid of an adjusting bolt fitted for this purpose. The free ends of the folded-over plate section are bent towards one another for gripping a single plate section between them. A join is then provided by welding. The single plate section or linking member is provided close to its free end with the horizontally projecting support member by welding.

[0003] Bracket assemblies of this type are, for example, used in concrete structures where it is desirable to fit facade elements, such as bricks, which have a more attractive appearance, after completion of the rough structure in concrete. If such bricks are used, a complete layer of bricks is supported, at regular vertical spacings, by a number of bracket assemblies mounted alongside one another. This allows dilatation of the structure and, moreover, prevents bricks from being subjected to too high a pressure as a result of the weight of the layers of bricks above them.

[0004] Stringent requirements are imposed on brackets of this type because these have to remain effective during the entire life of the building. This means that at present the brackets are generally made of stainless steel. In this context, welding of the support member to the linking member and of the linking member to the wall section is a problem. To guarantee adequate strength of the welds, it is assumed that there is a minimum thickness of the expensive stainless steel material used. However, the problem still remains that there is no guarantee that such welds will not fail under long-term stress (more than 20 years) as a result of the structural changes occurring in the weld. Moreover, a construction of this type uses a relatively large amount of material. Because the linking member extends over the support member in order to provide an adequate weld surface area, it is necessary that separation between two facade elements is made precisely where the vertically projecting linking member is located. In order to overcome this problem as far as possible it is proposed in the prior art in the case of concrete structures to fit a seating section along which the bracket assemblies can be slid backwards and forwards in an infinitely variable manner. However, problems remain, in particular in the vicinity of corners of building structures, because it is then necessary for the bracket assemblies to be a minimum distance away from the actual corner in order to realise adequate supporting strength, and this does not always correspond to the desired position of the facade elements concerned.

[0005] In the prior art some of the problems described

above are avoided by supplying brackets in various sizes, but this makes it more expensive to hold stocks.

[0006] In European Application 0 243 612, which discloses the subject matter according to the preamble of Claim 1, a bracket assembly is described in which the support plate is of trapezium shape and is provided with an elongated opening for accommodating a bolt therein, which bolt is then connected to the linking member.

[0007] A construction of this type demands highly accurate positioning of the support plate with respect to the bracket assembly. In particular, if the support plate is supported by various bracket assemblies this means that it is unavoidable that the relevant opening for the bolt is adjusted or made on site. This has drawbacks, especially if stainless steel is used. Another possibility is to adjust the bracket assembly, but if window frames and the like are present this frequently constitutes a hindrance, with the result that in the case of small tolerances problems soon arise for those who have to fix such a construction to a facade.

[0008] The aim of the present invention is to avoid the disadvantages described above and to provide an improved bracket assembly.

[0009] This aim is realised with a construction as described above which has the characterising features of Claim 1. With the structure according to the invention, the support member can be firmly connected to the linking member of the bracket assembly by simply tilting and inserting. Bolt connections or the like, the production of which is dependent on the longitudinal position of the support plate with respect to the linking member, are no longer necessary. Consequently, the assembly, consisting of fixing member and linking member, can be fitted to the facade in a relatively inaccurate manner. Only the vertical position of the linking member is of importance and has to be accurately adjusted.

[0010] The gripping means according to the invention comprise a seat which has a downward facing access opening for accepting a projecting part of the support plate, which can be accommodated therein. In this context it is important that the support plate is not able to move away from the facade once it has been snapped into place. After all, the bearing force resulting from the weight of the facade element concerned comes to act on the underside of the support plate. This force is taken up by the relevant linking member of the construction.

[0011] The support plate can be reinforced by making this of tubular construction close to the end thereof which has to be brought into engagement with the other parts of the bracket assembly.

[0012] According to a variant of the invention, linking member and fixing member are integrated and are adjustable with respect to the fixing projecting from the fixing wall with the aid of, for example, an adjusting bolt, such as a T-head bolt. In another alternative embodiment, the fixing member and the linking member are separate parts. In this case the fixing member is firmly attached in one position to the wall concerned and the linking mem-

ber can be adjusted in the vertical direction with respect to the fixing member, for example by means of serrations. [0013] According to an advantageous embodiment of the invention, the support member comprises a first horizontal section for supporting a facade element, a first adjoining section which extends essentially vertically upwards and which when fitted bears at least against one of said plate sections of the linking member, and a second essentially horizontal section, which adjoins said first section and which, when fitted, is at least partially located in a recess in the plate sections of the linking member. With the construction according to the present invention it is no longer necessary for the joint face between two facade elements to be in a specific position with respect to the bracket assembly. After all, both the first horizontal section and the first vertical section can be of flat construction, without projecting ribs or the like. Fitting of the bracket assembly according to the invention can therefore be carried out more simply.

[0014] Fixing of the support member and the linking member can be further optimised if a second vertical section adjoins the second horizontal section, which second vertical section, when fitted, is at least partially located in a recess in the plate sections of the linking member. On the one hand, this enables simple insertion into one another and, on the other hand, creates an adequate supporting surface for the support member. A cotter or the like can optionally be fitted between the support member and the linking member in order fully to secure these two sections. Moreover, it is possible for other securing means for the support member to be present in order unequivocally to fix the position with respect to the linking member.

[0015] Adjustment of the bracket assembly with respect to the underlying wall or other part of the building structure can be carried out in any way known from the prior art, using adjusting bolts and the like.

[0016] However, because the part of the bracket assembly which bears against the wall consists of two plate sections, it is possible to make use of the resulting stability by making recesses in the plate sections to accommodate an adjusting wedge. By inserting such an adjusting wedge, precise positioning of the bracket assembly with respect to the wall or other building structure can be obtained in a particularly simple manner after (partially) tightening the fixing between the bracket assembly and the wall and by driving the adjusting wedge inwards to a greater or lesser extent.

[0017] The connection between the two plate sections located some distance apart can comprise any construction known from the prior art. It is possible to produce the connection by folding over. Furthermore, it is possible to fit bushes which are fixed to the plate sections by clamping. Finally, it is possible to provide a screw thread in this connection.

[0018] With the structure according to the present invention it is particularly simple to produce a support for a facade element, which support consists of various

5 bracket assemblies. After all, it is necessary only to fit a number of bracket assemblies consisting of the above-mentioned linking plates and fixing means to the wall or other part of the building structure and then to fit an elongated support member by insertion in the relevant linking members of the bracket assemblies. Because accurate positioning is no longer important, it is possible to make adjustments on the building site when producing the construction, by means of simple adjustment. This was not 10 possible in the prior art because in this case the support member was permanently joined by welding to the other members of the two bracket assemblies and adjustments were possible only by breaking these weld joints and producing welds in a different place. Especially if stainless 15 steel is used, there is no guarantee whatsoever that a weld of adequate strength can be produced on the building site.

[0019] The invention will be explained in more detail 20 below with the aid of illustrative embodiments shown in the drawing. In the drawing:

Fig. 1 shows a perspective and partially exploded view of the bracket assembly according to the invention;

25 Fig. 2 shows the bracket assembly according to Fig. 1 after fitting;

Fig. 3 shows a variant of the bracket assembly according to the invention;

30 Fig. 4 shows a first application of a further variant of the invention;

Fig. 5 shows a second application of the same variant of the invention; and

35 Fig. 6 shows exposed details of the construction shown in Figs 4 and 5.

[0020] A first embodiment according to the present invention will be described with reference to Figs 1 and 2 and in the figures the bracket assembly, comprising the support member and linking member, according to the invention, is indicated in its entirety by 1. The bracket assembly must be fixed to the wall 2 of a building structure. It must be understood that, instead of such a wall, other parts of a structure can be used for fixing the bracket assemblies 1. A seating section 3 has been incorporated 40 in said wall, which in this case is of poured concrete. This section is equipped to accommodate the head 19 of a T-head bolt 9. As can be seen from the figures, said T-head bolt is inserted between the two plate sections 6 and 7. These plate sections, which are connected by bushes 8, form the wall section and fixing member of the bracket assembly 1. The plate sections 6 and 7, which are some distance apart, are pressed against wall 2 by tightening a nut 14. The vertical position of the plate sections 6 and 7 with respect to the T-head bolt 9 is determined 45 by the adjusting bolt 10, which screws into a screw thread 16 made in one of the connecting bushes 8 of the two plate sections 6 and 7.

[0021] It is possible to adjust the position of the plate

sections 6 and 7 with respect to the wall 2 by fitting one or more rings 12 between seating section 3 and the plate sections 6 and 7.

[0022] It is likewise possible to tilt the plate sections 6 and 7 relative to the wall. To this end, the plate sections are provided at the bottom with recesses 4 for accommodating an adjusting wedge 13. By forcing this wedge 13 in to a greater or lesser extent, the plate sections 6 and 7 are drawn towards the wall to a greater or lesser extent.

[0023] The plate sections 6 and 7, which are identical and are connected by the bushes 8 described above, which connection is achieved by clamping, are also provided with recesses 5. The latter serve to accommodate the support member 11 between them. Support member 11 consists of a first horizontal section 21 for supporting facade elements such as bricks 20. A first vertical section 22, which extends upwards, adjoins said first horizontal section 21. A horizontal section 23 then adjoins said first vertical section 22, a further vertical section 24 then adjoining said horizontal section 23. The vertical section 24 is extended by a securing rib 15 whereby securing rib 15 as depicted in figure 1 in case it does not enable arbitrary longitudinal positioning does not fall under the scope of claim 1. A reinforcing plate 26 is fitted between sections 22 and 23.

[0024] After fixing the two plate sections to the wall 2 by tightening a nut 14 and, if necessary, adjusting with the aid of wedge 13, support member 11 can be hooked into the seat 5 as shown in Fig. 2. It is, of course, possible to perform this operation in advance. With this arrangement the second horizontal section 23 and the first vertical section 22 bear on the plate-shaped sections 6 and 7. It will be understood that in order to produce this support it is not absolutely essential that the second horizontal section 23 extends purely horizontally and that the first vertical section 22 extends purely vertically. The same applies in respect of the first horizontal section. This can be adapted depending on the requirements imposed by the facade elements to be supported.

[0025] After fitting member 11 on the plates 6 and 7 a securing operation can be carried out. Because the recesses 5 are larger than the relevant "projections" of member 11 it is necessary, in order to make simple insertion possible, in particular in view of the second vertical section 24, to fill this gap subsequently and this can be achieved with the aid of securing member 17, which is of angular construction.

[0026] It can be seen from Fig. 2 that the position of horizontal section 21 with respect to brick 20 is not critical. That is to say, if any movement to the left or to the right takes place in this direction, this has no effect whatsoever on the support, so that accurate left/right positioning is not necessary.

[0027] As indicated above, there are extensive possibilities for adjusting the height of the plate sections 6, 7 with respect to the wall. The distance from the wall and the angle with respect to the wall 2 are also adjustable

with this construction.

[0028] The fixing between T-head bolt 9 and seating section 3 which has been described above is generally customary in the prior art and, therefore, it is not necessary to develop new techniques for fitting the bracket assembly according to the invention. With the construction described here it is possible, as with all bracket assemblies, to transfer the stress from the exterior facade to the underlying structure.

[0029] It will be understood that the various members of the structure can be provided with reinforcing ribs or grooves. Furthermore, it will be understood that it is now particularly simple to fit a continuous support member 11. That is to say, two bracket assemblies, optionally including support member 11, are first fitted, such an embodiment having no or only one securing lip 15. The left/right position of the two sets of plate sections with respect to one another is no longer critical, as is the case in the prior art, which appreciably facilitates fitting.

[0030] As indicated above, the connection between the two identical plate sections is produced by fitting bushes. These bushes 8 are fixed to the plate sections 6, 7 by means of clamping or seaming over. This type of fixing has the advantage that no structural changes occur in the material of the plate sections 6 and 7. As a result of the construction now used, there is no risk of such a structural change associated with heat treatment at any point at all, and it is therefore easily possible to guarantee a very long life (of more than 50 years). It must be understood that other techniques, such as folding over, are also possible for producing the connection between the two plate sections 6, 7.

[0031] A variant of the invention is shown in Fig. 3. In this variant an adjusting bolt 18, which is accommodated by a screw thread in the relevant bush 8, provides adjustment at the bottom of the plate sections 6, 7 with respect to the wall 2.

[0032] Furthermore, the plate assembly is now provided close to the top with seats 25 to accommodate wedge 13. A particularly wide range of adjustment possibilities exists in this way.

[0033] A further variant is shown in Figs. 4-6. The parts which correspond to what has been described above are provided with the same reference numerals. This bracket assembly is indicated in its entirety by 31.

[0034] Fig. 4 shows an embodiment with a short support plate 37, while Fig. 5 shows an embodiment with a relatively long support plate 51.

[0035] The structure shown here is likewise fixed to a seating section 3 which is an integral part of the poured wall 2. The various members are supported by bolt 38, as is shown in Fig. 6. When the structure has been fitted, the fixing member 32 is fitted over it, which fixing member 32 consists of two plate sections some distance apart which are joined at the top by means of a curved section. The construction is fixed in such a way that the curved section is always in contact with bolt 38. With the construction shown here, height adjustment is effected by

the presence of serrations 45 on fixing member 32 and corresponding serrations 46 on linking member 30. That is to say, starting from a fixed position of fixing member 32, the height of linking member 30 can be adjusted easily and the position concerned can be fixed by tightening nut 34, which drives fixing member and linking member towards one another via retaining plate 33, such that the two members lock.

[0036] A bracing construction indicated in its entirety by 36 is provided for horizontal adjustment of the bracket. This bracing construction consists of a bearing block 50, which is provided with a screw-thread seat, a U-shaped part 49 provided with an opening, and a bolt 47, which can extend both through the opening in the U-shaped part and into the screw thread of block 50. The U-shaped part 49 is provided with snap-fit lips 53, which on assembly engage in corresponding openings 52 in fixing member 45.

[0037] The linking member 30 likewise consists of a folded-over plate section which can be joined by pins at various locations which are not shown. A lip 35 is fitted as a separate member. The lip is firmly fixed to the linking member 30 by means of pin 48 and is provided with a seat 39. However, it must be understood that such a lip can also be produced by suitable punching of the blank for the linking member 30 or in any other way obvious to those skilled in the art. The lower part of linking member 30 is likewise provided with a seat 44 designed to accommodate the set-back part 43 of the triangular part 40 of the support plate 37. The triangular part is provided at the top with a curvature 41 which is able to engage in seat 39 of lip 35.

[0038] It will be understood that increased rigidity of the support plate 37 is obtained with such a triangular construction. It will also be understood that such a triangular construction can be replaced by any tubular construction known from the prior art.

[0039] As in the case of the construction described above with reference to Figures 1-3, the fixing member and linking member are first fixed to the wall concerned and the support plate can then be fixed in any arbitrary position (longitudinal) with respect to the part already fitted. That is to say, in contrast to the prior art, it is not necessary to position the support plate accurately with respect to the other part of the bracket. The support plate is fitted by simply inserting the rounding 41 into seat 39 and then tilting downward so that part 43 engages with seat 44.

[0040] In particular, simple construction is possible in this way, as is shown in Fig. 5. After all, if different brackets are used for fixing a support plate it is, of course, necessary in the case of the prior art to drill holes in the support plate on site, which is particularly undesirable.

[0041] From the above it will be obvious to those skilled in the art to conceive further variants which fall within the scope of the appended claims.

Claims

1. Bracket assembly (1, 31) to be fixed to a wall (2) or other part of a building structure to support a facade element (20), comprising a member to be fixed to said wall, a member (11) supporting the facade element having a first horizontal section (21, 37) for supporting a facade element, and a member (6, 7) linking the fixing member (9) and the support member (11), wherein the linking member and the support member are provided with interacting gripping means (5, 24, 39, 41) constructed such that the support member can be fixed in an arbitrary longitudinal position with respect to the linking member, characterized in that said gripping means (5, 24, 39, 41) comprise a seat provided in the linking member, comprising a downward facing access opening to accommodate a projecting part (24) of said support member, said projecting part comprising a second vertical section (24) bearing on said linking member, a horizontal section (23), a first vertical section (22) which extends upwards from and adjoins said first horizontal section (21), wherein said first vertical section (22) adjoins said horizontal section (23), and said linking member bears said horizontal section (23) and said first vertical section.
2. Bracket assembly according to claim 1, wherein support means are present, comprising a support surface (44), arranged on the linking member, to accommodate thereon a member (43) which in the use position extends essentially flat.
3. Bracket assembly according to one of the preceding claims, wherein said support member comprises a section for taking the facade element and an adjoining tubular section (40) equipped to interact with the linking member.
4. Bracket assembly according to one of the preceding claims, wherein the plate sections of the fixing member are provided, on that side which, when the member is fitted, faces towards the wall, with seats (4) for accommodating an adjusting wedge (13).
5. Bracket assembly according to one of the preceding claims, wherein a screw thread for accommodating adjusting means (10) is provided in the connection between the plate sections.
6. Bracket assembly according to one of the preceding claims, wherein at least one of the linking member and the fixing member is provided with a series of first locking means (45), which extend vertically in the use position, and the fixing member or the linking member is provided with second locking means (46) which interact with said first locking means (45).

7. Support for a facade, comprising at least two bracket assemblies according to one of the preceding claims fitted along-side one another, wherein the support member (11) extends uninterrupted between said bracket assemblies.

Patentansprüche

1. An einer Wand (2) oder einem anderen Teil einer Gebäudestruktur anzubringende Konsolenanordnung (1, 31) zum Tragen eines Fassadenelements (20), wobei die Konsolenanordnung ein an der Wand zu befestigendes Element, ein das Fassadenelement tragendes Element (11), das einen ersten horizontalen Abschnitt (21, 37) zum Tragen eines Fassadenelements aufweist, und ein das Befestigungselement (9) und das Trägerelement (11) verbindendes Element (6, 7) aufweist, wobei das Verbindungs-element und das Trägerelement mit zusammenwir-kenden Greifeinrichtungen (5, 24, 39, 41) versehen sind, die so konstruiert sind, dass das Trägerelement in einer frei wählbaren Längsposition bezüglich des Verbindungselementes befestigt werden kann, **durch gekennzeichnet, dass** die Greifeinrichtungen (5, 24, 39, 41) einen im Verbindungselement vorgesehenen Sitz aufweisen, der eine nach unten gekehrte Zugangsöffnung zum Aufnehmen eines vorspringenden Teils (24) des Trägerelements auf-weist, wobei der vorspringende Teil einen auf das Verbindungselement drückenden zweiten vertikalen Abschnitt (24), einen horizontalen Abschnitt (23), ei-nen ersten vertikalen Abschnitt (22), der sich vom ersten horizontalen Abschnitt (21) nach oben er-streckt und an letzteren angrenzt, aufweist, wobei der erste vertikale Abschnitt (22) an den horizontalen Abschnitt (23) angrenzt und das Verbindungs-element den horizontalen Abschnitt (23) und den ersten vertikalen Abschnitt trägt.

2. Konsolenanordnung nach Anspruch 1, wobei Trä-gereinrichtungen vorhanden sind, die eine auf dem Verbindungselement angeordnete Trägerfläche (44) aufweisen, um darauf ein Element (43) aufzu-nehmen, das sich in der Gebrauchsposition im We-sentlichen eben erstreckt.

3. Konsolenanordnung nach einem der vorhergehen-den Ansprüche, wobei das Trägerelement einen Ab-schnitt zum Nehmen des Fassadenelements und ei-nen angrenzenden röhrenförmigen Abschnitt (40) aufweist, der ausgestattet ist, um mit dem Verbin-dungselement zusammenzuwirken.

4. Konsolenanordnung nach einem der vorhergehen-den Ansprüche, wobei die Plattenabschnitte des Be-festigungselementes auf derjenigen Seite, die, wenn das Element angebracht ist, zur Wand hin gekehrt

ist, mit Sitzen (4) zur Aufnahme eines Stellkeils (13) versehen sind.

5. Konsolenanordnung nach einem der vorhergehen-den Ansprüche, wobei ein Schraubengewinde zur Aufnahme von Stelleinrichtungen (10) in der Verbin-dung zwischen den Plattenabschnitten vorgesehen ist.

10 6. Konsolenanordnung nach einem der vorhergehen-den Ansprüche, wobei wenigstens das Verbin-dungselement und/oder das Befestigungselement mit mehreren ersten Verriegelungseinrichtungen (45) versehen ist/sind, die sich in der Gebrauchsposi-tion vertikal erstrecken, und wobei das Befesti-gungselement oder das Verbindungs-element mit zweiten Verriegelungseinrichtungen (46) versehen ist, die mit den ersten Verriegelungseinrichtungen (45) zusammenwirken.

15 20 7. Träger für eine Fassade, der mindestens zwei ne-beneinander angebrachte Konsolenanordnungen nach einem der vorhergehenden Ansprüche auf-weist, wobei sich das Trägerelement (11) kontinu-ierlich zwischen den Konsolenanordnungen er-streckt.

Revendications

30 1. Ensemble de console (1, 31) à fixer sur une paroi (2) ou autre partie d'une structure de bâtiment pour supporter un élément de façade (20), comprenant un élément à fixer à ladite paroi, un élément (11) supportant l'élément de façade avec une première section horizontale (21, 37) pour le support d'un élément de façade, et un élément (6, 7) reliant l'élément de fixation (9) et l'élément de support (11), dans lequel l'élément de liaison et l'élément de support sont dotés de moyens de saisie interactifs (5, 24, 39, 41) construits de sorte que l'élément de support puisse être fixé dans une position longitudinale arbitraire par rapport à l'élément de liaison, **caractérisé en ce que** lesdits moyens de saisie (5, 24, 39, 41) comprennent un siège prévu dans l'élément de liaison, comprenant une ouverture d'accès dirigée vers le bas pour loger une partie en saillie (24) dudit élément de support, ladite partie en saillie comprenant une seconde section verticale (24) portant sur ledit élément de liaison, une section horizontale (23), une première section verticale (22) qui s'étend vers le haut et est contiguë à ladite première section horizontale (21), dans lequel ladite première section verticale (22) est contiguë à ladite section horizontale (23) et ledit élément de liaison porte ladite section horizontale (23) et ladite première section verticale.

40 45 50 55 2. Ensemble de console selon la revendication 1, dans

lequel des moyens de support sont présents, les-
quels comprennent une surface porteuse (44) dis-
posée sur l'élément de liaison pour loger dessus un
élément (43) qui s'étend sensiblement à plat dans
la position d'utilisation.

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3. Ensemble de console selon l'une quelconque des revendications précédentes, dans lequel l'édit élément de support comprend une section pour prendre l'élément de façade et une section tubulaire contiguë (40) équipée pour interagir avec l'élément de liaison. 10
4. Ensemble de console selon l'une quelconque des revendications précédentes, dans lequel les sections plates de l'élément de fixation sont prévues, sur ce côté qui, lorsque l'élément est inséré, fait face à la paroi avec des sièges (4) pour loger une cale d'ajustement (13). 15
5. Ensemble de console selon l'une quelconque des revendications précédentes, dans lequel un filet de vis destiné à loger des moyens d'ajustement (10) est prévu dans la liaison entre les sections plates. 20
6. Ensemble de console selon l'une quelconque des revendications précédentes, dans lequel au moins un élément parmi l'élément de liaison et l'élément de fixation est doté d'une série de premiers moyens de verrouillage (45) qui s'étendent verticalement dans la position d'utilisation, et l'élément de fixation ou l'élément de liaison est doté de seconds moyens de verrouillage (46) qui interagissent avec lesdits premiers moyens de verrouillage (45). 25 30
7. Support pour une façade, comprenant au moins deux ensembles de console selon l'une quelconque des revendications précédentes, insérés le long l'un de l'autre, dans lequel l'élément de support (11) s'étend de manière ininterrompue entre lesdits ensembles de console. 35 40

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50

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fig-1

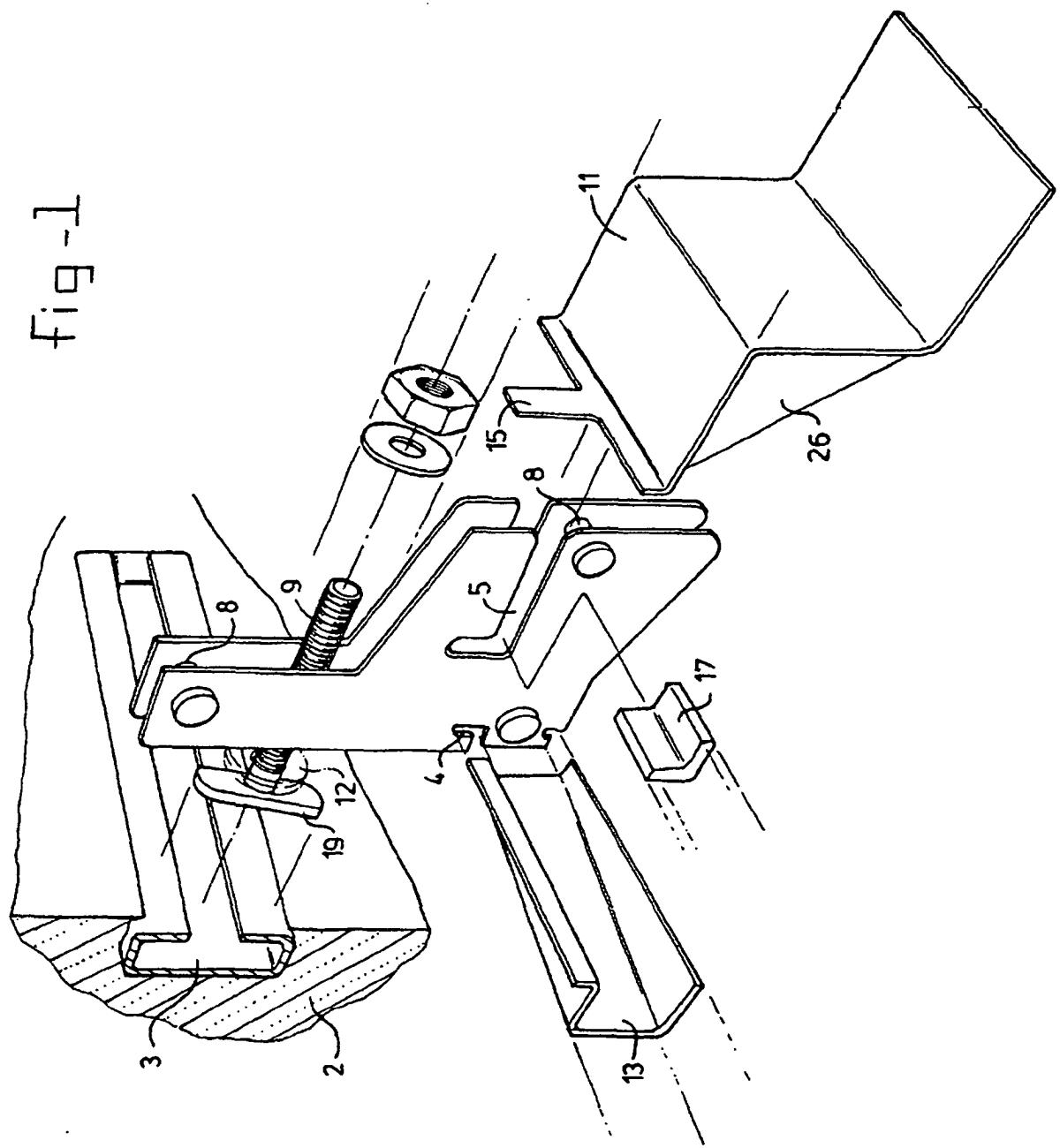


Fig -2

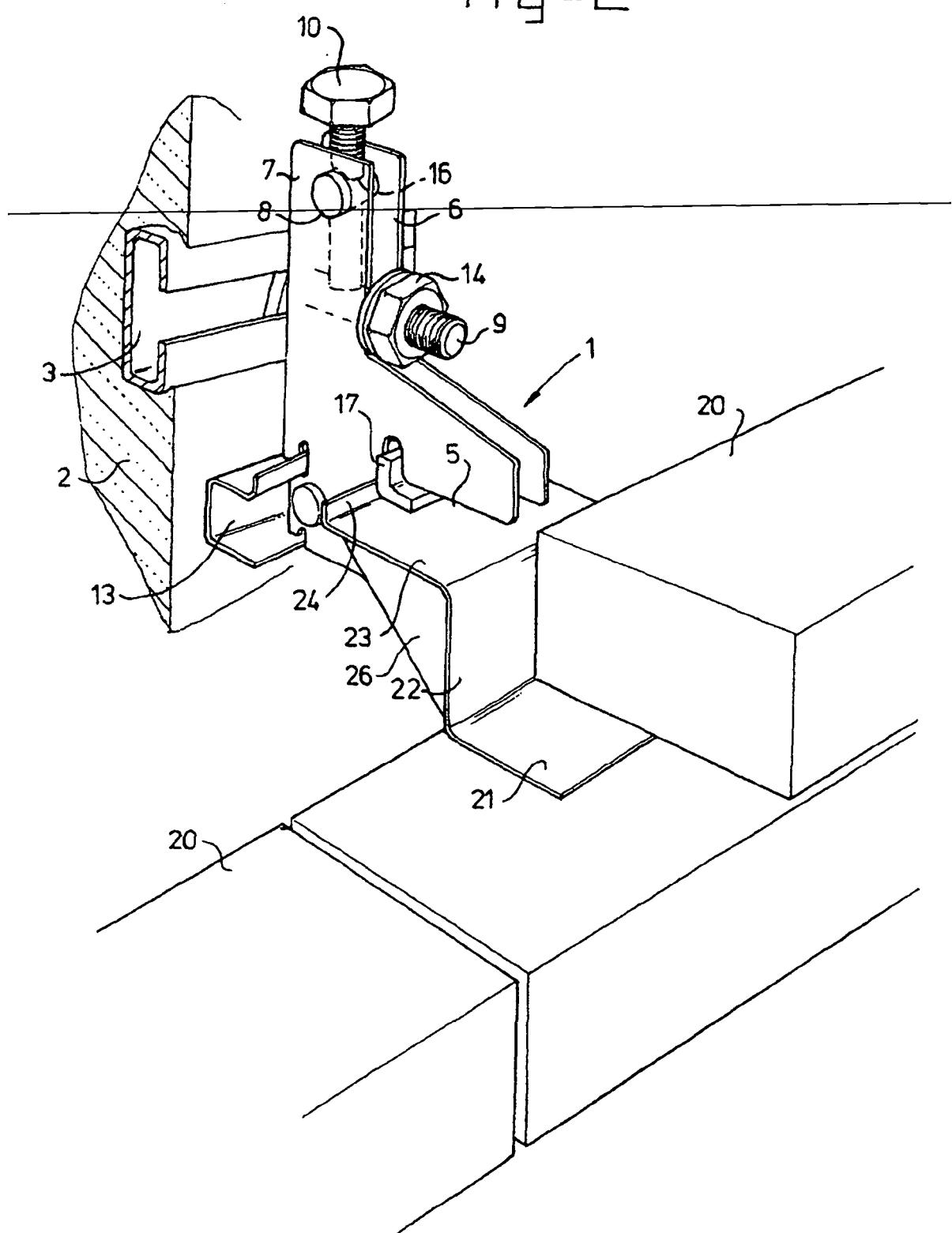


Fig - 3

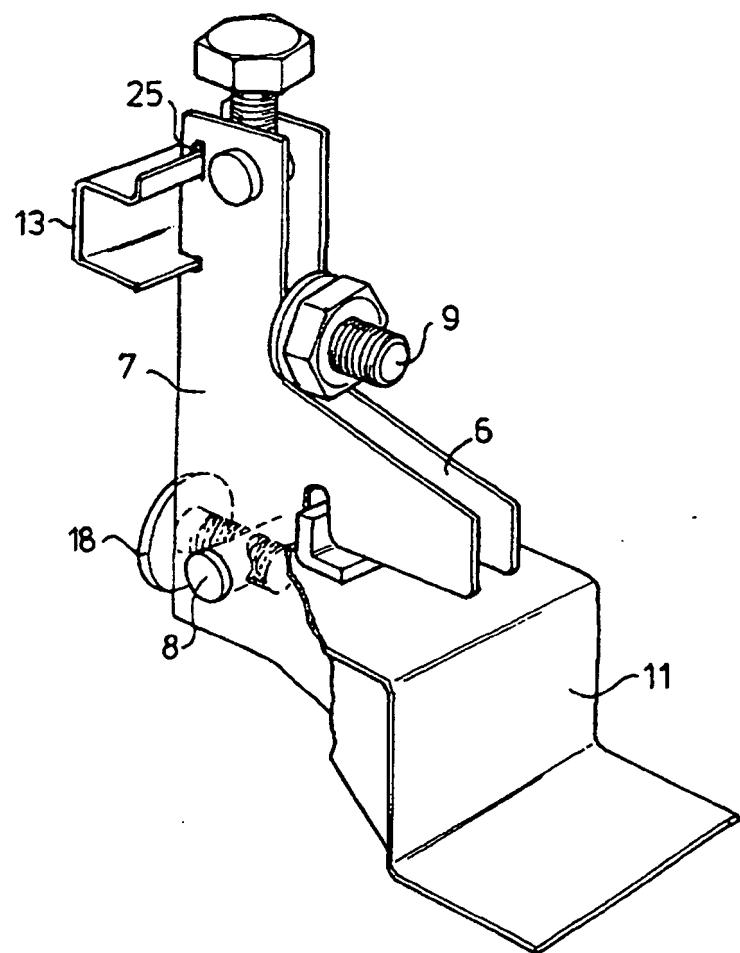


fig -4

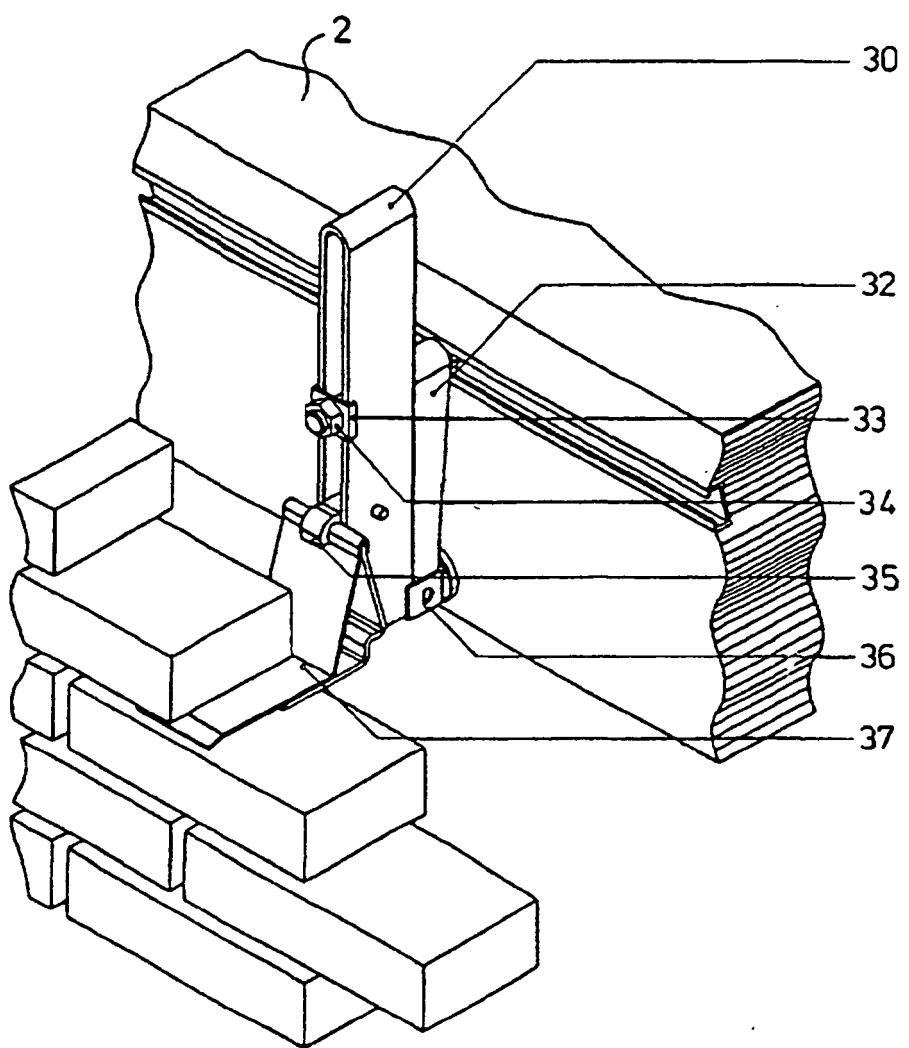
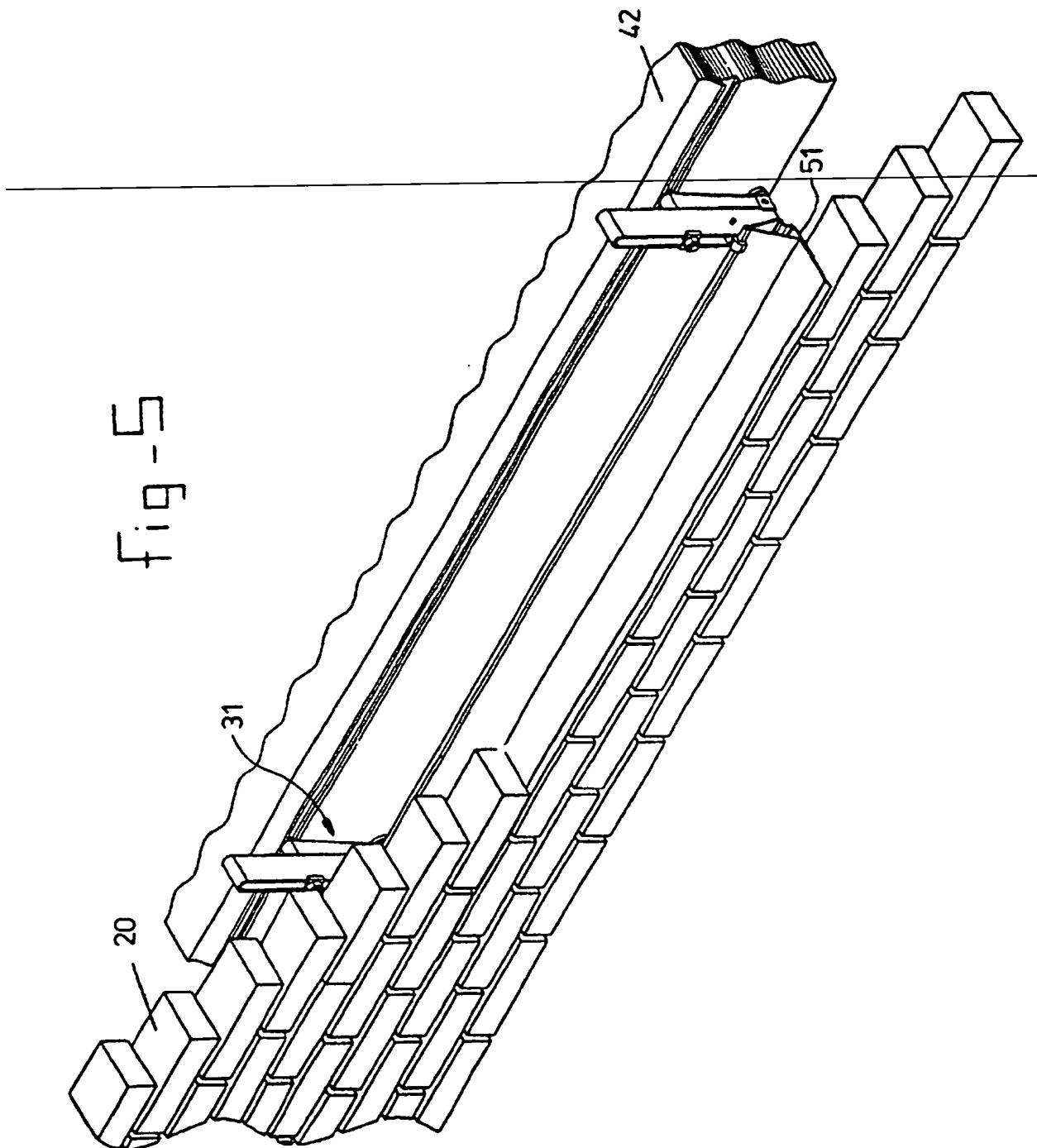


Fig - 5



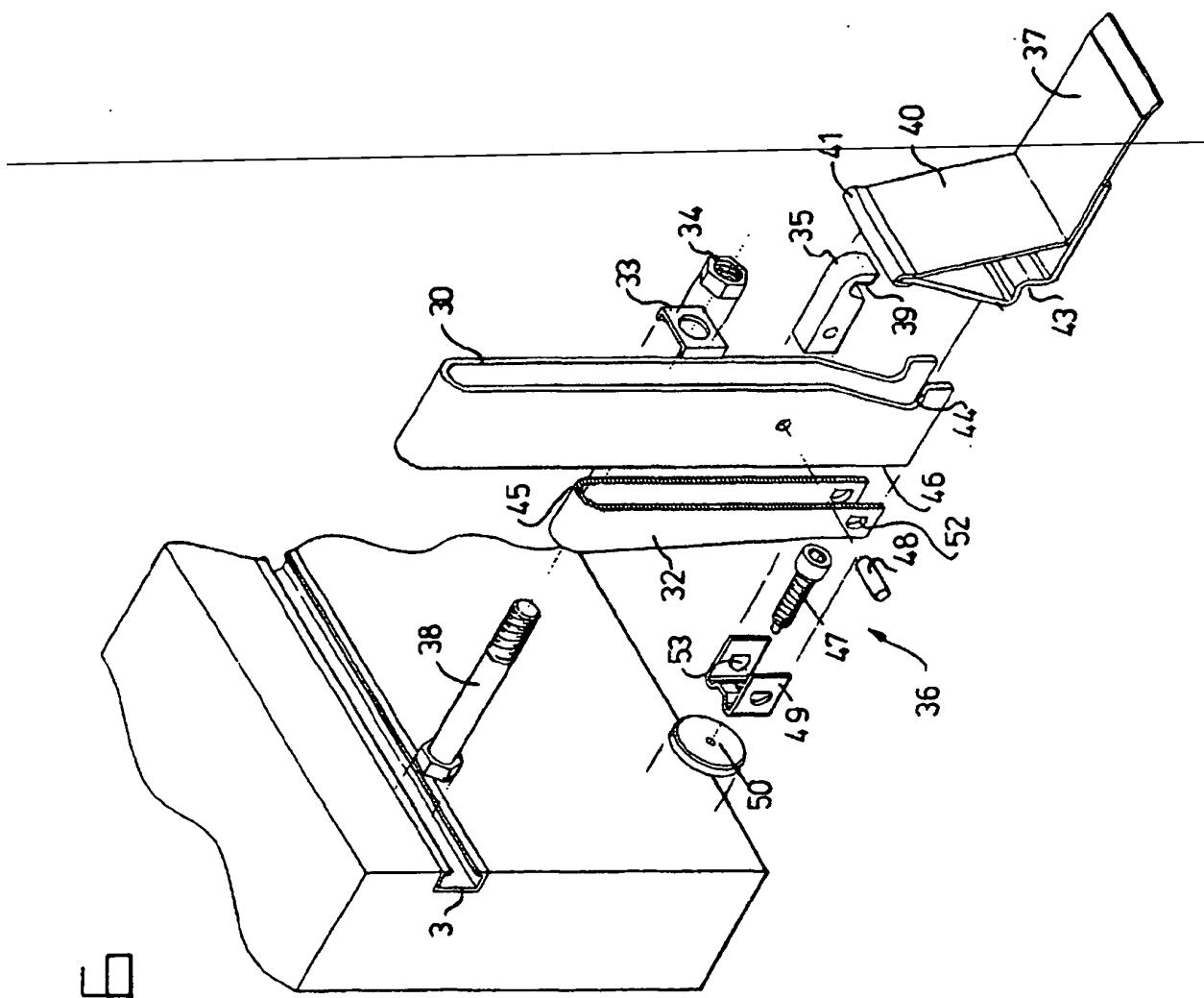


Fig - 5

REFERENCES CITED IN THE DESCRIPTION

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