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(54) **Concealed console joint**

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Description

[0001] The present invention relates to a concealed console joint, which is used in the joints between vertical and horizontal framework elements of a building, especially in the joints of a prefabricated concrete framework of a building, where a horizontal framework element, such as a prefabricated concrete beam, is joined and fastened to a vertical framework element, such as a prefabricated concrete column, via a load transmitting joint. The concealed console joint can also be used on the same principles in the beam-column joints of e.g. a reinforced-concrete composite-construction framework.

[0002] In the load-bearing framework of houses constructed from concrete elements, prefabricated beams and columns are used. The beams are generally concrete elements of a length corresponding to only one bay between columns. The columns are in most cases prefabricated concrete elements of a height corresponding to several floors. These framework elements are joined together on the building site during installation by first erecting the prefabricated columns and then mounting a prefabricated beam between the columns. The prefabricated beams are connected to the prefabricated columns via cast concrete brackets, which are formed in the columns already at casting time. The beam is mounted and fastened onto this bracket provided in the column. This method is expensive and difficult as it requires complex mould equipment for the prefabrication of the column. In addition, in most cases the bracket under the beam remains exposed, unless a lowered ceiling is built under a concrete slab. This bracket of the column requires a large space, typically 300 - 600 mm, which has to be taken into account when selecting the floor height of the building. Therefore, this is often an architectural question. Moreover, in construction element prefabrication technology, parts protruding from the mould involve fairly high costs.

[0003] Known in prior art is also a concealed console structure that can be used instead of the above-described solution and that requires no consoles or similar brackets cast in mould, instead permitting the entire joint to be placed inside the beam so that no protruding parts of the joint remain exposed. This makes it possible to reduce the manufacturing costs and to achieve an architecturally improved solution. One concealed console solution is disclosed in FI-specification 83358, in which the prefabricated column comprises a metallic console element and the prefabricated beam has a corresponding attaching part. The attaching part consists of a metallic fastening slot provided at the end of the beam, the bottom and lateral surfaces of the slot being fitted against and supported by the console element in the column to receive the moment produced by the weight of the beam and an eccentric load. The console element is fastened with screws to a plate embedded in the cast column. WO 02/33185 also discloses a concealed console solution wherein a console element is fastened with screws to a plate embedded in the column.

[0004] WO-A- 88/08061 discloses a bearing means intended for bearing coaction between a supporting structural component and a supported structural component, said means being adapted for casting into one of said structural components and for coaction with a bearing member. The bearing means comprises at least one substantially U-shaped section, the base of which provides the bearing surface against the bearing member, and the legs of which constitute fastening means for anchoring means and stiffeners, which transmit bearing force to the concrete surrounding the bearing means and to adjacent reinforcement.

[0005] In WO-A- 88/08061 a supporting structural component may be a column, wall or beam, while a supported structural component may be some form of beam, often a facade element, or a so-called "windowback". A bearing member of the kind intended here is often a steel flat with its face vertical, a so-called knife-edge bearing. A knife-edge bearing of a type in WO-A- 88/08061 is a steel flat with its face vertical which is cast into and anchored in a column. The flat is disposed to project at right angles from the sides of the column and is used as a bearing bracket for beams with so-called hidden bearings.

[0006] The structure in WO-A- 88/08061 has an elongated cast-in U-shaped steel channel, which forms an open slot in the beam end, the slot being defined by the legs and base of the U-section, the bottom surface of the base being the bearing surface of the supported element against an flat steel bracket, there also being shown a plate end stiffener. The bearing force to the concrete can also be transmitted with outwardly folded flange parts having flaps which have been folded up 90° from the inner ends of the flanges and are welded by welds to the legs. Eccentric loads in WO-A- 88/08061 have been carried by an external structure, like a horizontal hole and a bolt at the upper end of a supported beam in Fig. 10. A similar elongated channel for the knife-edge bearing plate is also arranged in the supporting column.

[0007] GB-A-2179115 discloses a construction system consists of a beam fixed to the side face of a concrete column with the aid of a carrying member. The carrying member has three vertical abutment faces engaged against the side plate of the column and a horizontal carrying surface for the beam above the lower margin of the abutment face. The vertical abutment faces are provided with three hooks extending upward and projecting towards the concrete column. The side plate of the concrete column is provided with three recesses extending upward into which the hooks of the carrying member are inserted.

[0008] The object of the present invention is to achieve a new type of concealed console joint. The concealed console joint of the invention consists of three prefabricated steel parts, by means of which a joint between a prefabricated beam and a prefabricated column can be formed after the casting of the prefabricated concrete elements. A steel part is mounted in the mould for the prefabricated column and embedded in the column in

connection with the casting of the latter. This steel joint element embedded in the column does not protrude at all from the surface of the column. The joint element of the column is provided with an opening, in which a joint adapter is mounted. The end of the prefabricated beam is provided with another joint element of a corresponding type, which is mounted in the mould of the prefabricated beam and embedded in the beam in connection with the casting of the beam. This joint element again has no parts protruding from the beam. The joint element of the beam also has an opening into which the joint adapter connecting the beam and the column becomes fastened.

[0009] The actual joint between the prefabricated beam and the prefabricated column is formed on the construction site at installation time by using a third part, a joint adapter connecting the joints. This joint adapter is a discrete part and it is so shaped that it fits into the openings in the joint elements of the beam and the column. The joint adapter connecting the joints is mounted in the joint element of the prefabricated column before the prefabricated beam is mounted, and it is locked in place without any screws or similar fastening elements. The beam is so mounted that it remains supported by the adapter connecting the joints, whereupon the joint is ready to carry a load.

[0010] The features of the joining unit of the invention are presented in detail in the claims below.

[0011] The invention relates to a concealed console joint for joints between vertical and horizontal framework elements of a building, especially for joints of a prefabricated concrete framework of a building as defined by claim 1.

[0012] Because of the tolerances required in the manufacture and installation of a concrete element framework, the concealed console joint of the invention must also be adjustable so as to allow the variation in dimensions occurring in the manufacture and installation of the prefabricated elements to be eliminated when the console joint is being made. Adjustability of the joint is a basic requirement that has to be fulfilled to allow the installation of a large prefabricated-element framework to be accomplished without difficulties and accurately observing the designed dimensions. Variations in dimensions in the building framework appear at the end of the beam as displacements in the directions of the three principal coordinate axes and as a twisting of the column and the beam relative to their longitudinal axes. It is necessary to have a possibility of adjusting the concealed console joint at installation time in the directions of these three deviations in dimensions and relative to three twisting directions. The console joint is adjusted by using the following solutions: A displacement in the direction of the longitudinal axis of the beam is adjusted by utilizing the clearance provided between the beam part and the adapter part. A horizontal displacement of the beam end is adjusted by means of shims of different thicknesses placed inside the joint element and used to move the beam sideways in a horizontal direction. A twist about

the longitudinal axis of the beam is adjusted by means of wedging parts, which are used to lock the joint finally in place. A vertical displacement of the beam end is adjusted by means of the joint elements, which are mounted over the joint adapter. Once the adjustment of the joint has been accomplished, the interior joint area inside the beam is cast full of concrete, so this concrete ensures that the parts used for adjustment will remain in position, and it also functions as a fire protection of the joint.

[0013] Although the joint is required to be adjustable, the joint must also be capable of transmitting forces in all three directions of adjustment. This is achieved by locking all degrees of freedom of displacements and twists of the joint after the adjustment. However, since the console joint in the ultimate application situation functions as an elbow joint for vertical loads imposed on the beam, the beam end must be allowed to turn in the vertical direction even after the joint has been cast with concrete.

[0014] In the following, the invention will be described in detail by the aid of an example with reference to the attached drawings, wherein

Fig. 1 presents a side view of a part of a console according to the invention, designed to be placed in a prefabricated concrete column and having a square or rectangular cross-section,

Fig. 2 presents a part of a console according to the invention, designed to be placed in a prefabricated concrete column and having a square or rectangular cross-section, as seen from the front side of the a joint surface,

Fig. 3 presents a console according to the invention placed in a prefabricated column as seen from above, Fig. 3A showing the same in partial longitudinal section as seen from above,

Fig. 4 presents a side view of a part of a console according to the invention, designed to be placed at the end of a prefabricated concrete beam,

Fig. 5 presents a top view of a part of a console according to the invention, designed to be placed at the end of a prefabricated concrete beam,

Fig. 6 presents a part of a console according to the invention, designed to be placed at the end of a prefabricated concrete beam, in partial longitudinal section as seen from the back side of the joint surface,

Fig. 7 presents a side view of a joint element connecting the parts of the console,

Fig. 8 presents a front view of a joint element connecting the parts of the console,

Fig. 9 shows how the console parts of a prefabricated concrete column and a prefabricated concrete beam are fitted together to form a functional concealed console, and

Fig. 10 presents the adjusting elements needed in installation-time adjustment of the concealed console before the console joint is mounted in place.

[0015] Figures 1, 2, 3 and 3A illustrate a joint element

of the concealed console joint of the invention, which is placed in the column mould and embedded in the column at casting time. The joint element consists of the following components: Component 1 is the base plate of the column joint element and it consists of two plates joined together in a substantially square shape, the upper one of said plates being provided with a rectangular opening 1 a, the lug 22 of the beam joint element (Fig. 7) being fitted into this opening 1 a. Components 2 are straight corrugated steel bars used as anchorages for transmitting forces to the column. Typically, 1 - 3 bars are used. Component 2 meets component 1. Component 3 is a protective casing protecting the joint. It is made of bent steel sheet and attached to components 1, 4 and 5 so that components 1, 3, 4 and 5 form a box-like space 3a. Component 4 consists of a rectangular steel plate, which is attached to components 1, 3 and 5 and which has a rectangular opening 6 cleft in its middle part, joint element 21 (Fig. 7) being fitted into this opening. Component 7, which is made of concrete steel and has an expanded conical head 8 at one end, forms a part anchoring the joint to the column. Component 5 forms the top of the encasement space 3a. It is a rectangular plate with a rectangular opening 9 and a collar 10, which engage the shoulder 23 (Fig. 7) of the joint adapter connecting the joints is supported.

[0016] Figures 4 - 6 present a joint element designed to be mounted in the mould of a prefabricated beam for a concealed console joint according to the invention and embedded in the prefabricated beam at casting time, said joint element consisting of the following components: Component 41 is a rectangular form-cut joint end plate, which is placed level with the end of the prefabricated beam. In the central part of component 41 there is a rectangular, downwardly open slot 42, the upper edge of the slot being provided with a stop element 43, which is supported on the upper surface 24 of the joint adapter (Fig. 7). Component 40 is a support plate at the upper edge of component 41. Component 44 is a plate-like encasement forming a downwardly open space 44a. Components 45 and 46 are straight corrugated bars, which are anchored to joint elements 47 and 48. Component 47 is a lower support plate of the joint, surrounding the open space 44a. Component 48 is an upper support plate of the joint and it is provided with an open rectangular aperture 49. The encasement 44 has stop faces 20, on which the support blocks 26 (Fig. 8) of the joint adapter are supported.

[0017] Figures 7 and 8 present a joint adapter connecting the column and beam parts of the concealed console joint of the invention. The adapter body 21 is a shaped plate-like part that is adapted to fit into the opening 6 and slot 42 of the two counterparts. The adapter body 21 comprises a projecting part 22 which engages stop element 1a of the column and a projecting part 23 that engages stop element 10 of the column. The adapter body 21 has an elbow 24 on which component 43 rests. The adapter body comprises a shaped plate-like support block 26,

which rests on the stop faces 20 of the beam part. The adapter body 21 comprises a rectangular part 32 which is fastened via components 33 to the adapter body 21. The adapter body 21 comprises a clutch element 31 having rounded edges on both sides. The clutch element 31 engages plate 40 of the beam. The front surface of the clutch element 31 is provided with a surfacing 36 made of a soft and compressible material, designed to permit a twist of the joint in the final application situation. The surfaces 25 of the adapter body are coated with a material preventing adhesion of concrete on the surfaces.

[0018] Fig. 9 illustrates a situation where a console joint is being installed. The joint adapter is mounted inside the column part so that stop face 22 of the joint adapter engages stop faces 1 and 1 a of the column part, and the shoulder 23 of the adapter is fitted into the opening 9 of component 5 and shoulder 23 engages collar 10. The prefabricated beam is mounted by lowering it from above directly down so that the adapter body 21 enters into the slot 42 of component 41.

[0019] Installation-time adjustment of the console joint is performed using adjusting elements as presented in Fig. 10. The plate-like elements 27 are placed against stop faces 20 inside the encasement 44 of the beam part. The thickness and position of the plates 27 can be varied depending on the required lateral adjustment of the joint. The wedge-shaped parts 28 are placed inside the encasement 44 of the beam part, and they engage the adjusting elements 27 and the support plate 25 and 31 of the joint adapter. Horizontal displacement of the joint and longitudinal displacement of the beam are adjusted by means of joint elements 27 and 28.

[0020] Vertical adjustment of the joint is accomplished by the aid of joint element 32 of the joint adapter 21. By adjusting the height of this element, it is possible to adjust the vertical position of the whole joint.

[0021] Fire protection of the joint is implemented by mounting, by the aid of joint element 35, a shaped element 34 made of fire-resistant material into the downwardly open encasement 42 of the beam part. Fire protection can also be achieved by casting the encasement 42 of the beam part full of concrete. To ensure that the beam part can function as an articulated joint after the casting, surfaces 25 of the joint adapter 21 are treated with a material preventing the adhesion of concrete, and the front surface of the clutch 31 is provided with a surfacing 36 made of elastic material. The coating 25 and the material 36 permit a twist of the joint relative to the vertical axis.

[0022] The invention is not restricted to the embodiment described above; instead, it is defined by the appended claims. The column may also have a circular cross-section, in which case the corresponding parts of the concealed console joint are adapted to the shape of the column and the shape of the various parts of the console are therefore not restricted to the shapes described above.

Claims

1. Concealed console joint for joints between vertical and horizontal framework elements of a building, especially for joints of a prefabricated concrete framework of a building, where a horizontal framework element, such as a prefabricated concrete beam, is joined and fastened to a vertical framework element, such as a prefabricated concrete column, via a load transmitting joint,
 - said joint comprising a first and a second joint element, of which the first joint element is fitted in the vertical framework element, such as a prefabricated column, while the second joint element is fitted in the horizontal framework element, such as a prefabricated beam,
 - said console joint comprising a joint adapter (21), by means of which a joint can be formed by connecting the first and the second joint elements via the afore-said adapter especially without any parts protruding from the horizontal framework element,
 - said second joint element comprising a downwardly open slot (42), through which a projecting part (31) of the joint adapter can be fitted into the second joint element,
 - which joint adapter (21) connecting the joint is provided with a stop face (24) or stop faces while the second joint element comprises a stop element (43) or elements, against which the joint adapter stop face (24) can be fitted,
 - wherein the joint adapter (21) connecting the joint at the end of the first joint element, too, has a substantially projecting structure and the first joint element is provided with an opening (6) through which the end of the joint adapter can be fitted into the first joint element, said adapter being designed to be fitted into the first joint element without any special fastening elements,
 - characterized in that**
 - the first joint element has a lower horizontal base plate (1) formed of two substantial square plate parts, an upper plate part and a lower plate part, and an upper horizontal component (5) forming a top plate, whereby said base plate (1) and said top plate together with components (3) and (4) form a box-like space (3a),
 - the joint adapter comprises a first lower downward projecting stop element (22), being a lug, and a second upward projecting stop element (23), being a shoulder, which stop elements are to be inserted in the box-like space (3a) of the first joint element and the first joint element has corresponding first base plate stop element and second top plate stop element in the form of openings or cavities and stop faces in said base plate (1) and said top plate, said first base plate stop element being formed by a rectangular opening (1a) in the upper plate part of said lower base plate (1), said second base plate stop
 - element being formed by a rectangular opening (9) in said upper top plate part,
 - so that said first lower downward projecting stop element (22) of the joint adapter (21) can be fitted into the first base plate stop element of the first joint element and said second upward projecting stop element (23) of the joint adapter (21) can be fitted into the second top plate stop element of the first joint element,
 - said second upward projecting stop element (23) of the joint adapter (21) engages a stop face of said second top plate stop element of the first joint element while said first lower downward projecting stop element (22) of the joint adapter (21) simultaneously engages a stop face comprised in said opening (1a) of said first base plate (1) of the first joint element, and the second joint element has a downwardly open space (44a) provided with an end plate (41) with said downwardly open slot (42), the upper edge of said slot provided with a stop element (43) adapted to be supported on the upper surface (24) of the joint adapter so that the beam can be mounted by lowering it from above directly down so that the joint adapter (21) enters into said slot (42), and that it comprises an adjustable riser block (32), by means of which the vertical play of the joint can be adjusted by varying the height of the surface (24) of the joint adapter.
2. Concealed console joint according to claim 1, **characterized in that** the joint adapter (21) comprises a projecting part (31) having a rectangular shape and rounded edges on two sides, and the front surface of the projecting part placed against the second joint element (40) is provided with a filling (36) made of elastic or soft material.
 3. Concealed console joint according to claim 1, **characterized in that** it contains adjusting elements (27, 28) of a rectangular or wedge-like shape and of different thicknesses, which elements are used to adjust the lateral play and which can be placed between the stop faces (20, 25).
 4. Concealed console joint according to claim 1, **characterized in that** a stop block (26) of the joint adapter (21) is tightly pressed against the stop faces (20) of the second joint element.
 5. Concealed console joint according to claim 1, **characterized in that** the projecting part (22) of the joint adapter (21) rests on a plate (1) of the first joint element and on a bar (2) placed under it.
 6. Concealed console joint according to claim 1, **characterized in that** the downwardly open encasement (44a) comprised in the second joint element is cast substantially full of concrete, and that the materials

of the front surface (36) and lateral surfaces (25) of projecting part (31) of the joint adapter (21) permit twisting of the joint relative to the vertical axis after the casting.

Patentansprüche

1. Unterputz-Auslegerverbindung für Verbindungen zwischen vertikalen und horizontalen Rahmenelementen von einem Gebäude, insbesondere für Verbindungen von einem vorfabrizierten Betonrahmen von einem Gebäude, wobei ein horizontales Rahmenelement, wie beispielsweise ein vorfabrizierter Betonträger, an einem vertikalen Rahmenelement, wie beispielsweise eine vorfabrizierte Betonsäule, über eine Lastübertragungsverbindung verbunden und befestigt ist, wobei die Verbindung ein erstes und ein zweites Verbindungselement enthält, wobei das erste Verbindungselement in dem vertikalen Rahmenelement, wie beispielsweise eine vorfabrizierte Säule, eingefügt ist, während das zweite Verbindungselement in dem horizontalen Rahmenelement, wie beispielsweise ein vorfabrizierter Träger, eingefügt ist, wobei die Auslegerverbindung einen Verbindungsadapter (21) enthält, mittels dessen eine Verbindung ausgebildet werden kann, indem das erste und das zweite Verbindungselement über den zuvor genannten Adapter, insbesondere ohne jegliche Teile, welche von dem horizontalen Rahmenelement vorragen, verbunden werden, wobei das zweite Verbindungselement einen nach unten geöffneten Schlitz (42) enthält, durch welchen ein vorragendes Teil (31) von dem Verbindungsadapter in das zweite Verbindungselement eingefügt werden kann, wobei der Verbindungsadapter (21), welcher die Verbindung verbindet, mit einer Anschlagstückfläche (24) oder mit Anschlagstückflächen bereitgestellt ist, während das zweite Verbindungselement ein Anschlagstückelement (43) oder Elemente enthält, an welche die Verbindungsadapter-Anschlagstückfläche (24) eingefügt werden kann, wobei der Verbindungsadapter (21), welcher die Verbindung an dem Ende von dem ersten Verbindungselement verbindet, ebenfalls einen im Wesentlichen vorragenden Aufbau hat, und das erste Verbindungselement mit einer Öffnung (6) bereitgestellt ist, durch welche das Ende von dem Verbindungsadapter in das erste Verbindungselement eingefügt werden kann, wobei der Adapter derart entworfen ist, dass er ohne jegliche spezielle Befestigungselemente in das erste Verbindungselement eingefügt wird, **dadurch gekennzeichnet, dass** das erste Verbindungselement eine untere horizontale Basisplatte (1), welche aus zwei im Wesentli-

chen quadratischen Plattenteilen, einem oberen Plattenteil und einem unteren Plattenteil ausgebildet ist, und ein oberes horizontales Bauteil (5), welches eine obere Platte ausbildet, hat, wobei die Basisplatte (1) und die obere Platte zusammen mit den Bauteilen (3) und (4) einen kastenförmigen Raum (3a) ausbilden, der Verbindungsadapter ein erstes unteres nach unten vorragendes Anschlagstückelement (22), welches ein Anschlussstück ist, und ein zweites nach oben vorragendes Anschlagstückelement (23), welches eine Schulter ist, enthält, wobei die Anschlagstückelemente in den kastenförmigen Raum (3a) von dem ersten Verbindungselement einzusetzen sind, und das erste Verbindungselement ein entsprechendes erstes Basisplatten-Anschlagstückelement und ein zweites Oberplatten-Anschlagstückelement in der Form von Öffnungen oder Hohlräumen und Anschlagstückflächen in der Basisplatte (1) und der Oberplatte hat, wobei das erste Basisplatten-Anschlagstückelement durch eine rechteckige Öffnung (1a) in dem oberen Plattenteil von der unteren Basisplatte (1) ausgebildet ist, wobei das zweite Basisplatten-Anschlagstückelement durch eine rechteckige Öffnung (9) in dem oberen Oberplattenteil ausgebildet ist, so dass das erste untere nach unten vorragende Anschlagstückelement (22) von dem Verbindungsadapter (21) in das erste Basisplatten-Anschlagstückelement von dem ersten Verbindungselement eingefügt werden kann, und das zweite nach oben vorragende Anschlagstückelement (23) von dem Verbindungsadapter (21) in das zweite Oberplatten-Anschlagstückelement von dem ersten Verbindungselement eingefügt werden kann, das zweite nach oben vorragende Anschlagstückelement (23) von dem Verbindungsadapter (21) eine Anschlagstückfläche von dem zweiten Oberplatten-Anschlagstückelement von dem ersten Verbindungselement in Eingriff nimmt, während das erste untere nach unten vorragende Anschlagstückelement (22) von dem Verbindungsadapter (21) gleichzeitig eine Anschlagstückfläche in Eingriff nimmt, welche in der Öffnung (1a) von der ersten Basisplatte (1) von dem ersten Verbindungselement enthalten ist, und das zweite Verbindungselement einen nach unten geöffneten Raum (44a) hat, welcher mit einer Endplatte (41) mit dem nach unten geöffneten Schlitz (42) bereitgestellt ist, wobei die obere Kante von dem Schlitz, welcher mit einem Anschlagstückelement (43) bereitgestellt ist, dazu ausgelegt ist, auf der oberen Oberfläche (24) von dem Verbindungsadapter gelagert zu sein, so dass der Träger befestigt werden kann, indem er von oberhalb direkt nach unten abgesenkt wird, so dass der Verbindungsadapter (21) in den Schlitz (42) eintritt, und dass es einen einstellbaren Steigblock (32) enthält, mit-

tels dessen der vertikale Spielraum von der Verbindung eingestellt werden kann, indem die Höhe von der Oberfläche (24) von dem Verbindungsadapter variiert wird.

2. Unterputz-Auslegerverbindung nach Anspruch 1, **dadurch gekennzeichnet, dass** der Verbindungsadapter (21) ein vorragendes Teil (31) enthält, welches eine rechteckige Form und abgerundete Kanten an zwei Seiten hat, und die Vorderfläche von dem vorragenden Teil, welche gegen das zweite Verbindungselement (40) platziert ist, mit einer Füllung (36) bereitgestellt ist, welche aus einem elastischen oder nachgiebigen Material erstellt ist.
3. Unterputz-Auslegerverbindung nach Anspruch 1, **dadurch gekennzeichnet, dass** sie Einstelllemente (27, 28) von einer rechteckigen oder keilförmigen Form und von unterschiedlichen Dicken enthält, wobei die Elemente dazu verwendet werden, um den lateralen Spielraum einzustellen, und welche zwischen den Anschlagstückflächen (20, 25) platziert werden können.
4. Unterputz-Auslegerverbindung nach Anspruch 1, **dadurch gekennzeichnet, dass** der Anschlagstückblock (26) von dem Verbindungsadapter (21) fest gegen die Anschlagstückflächen (20) von dem zweiten Verbindungselement gepresst ist.
5. Unterputz-Auslegerverbindung nach Anspruch 1, **dadurch gekennzeichnet, dass** das vorragende Teil (22) von dem Verbindungsadapter (21) auf einer Platte (1) von dem ersten Verbindungselement und auf einer Stange (2), welche unterhalb davon platziert ist, ruht.
6. Unterputz-Auslegerverbindung nach Anspruch 1, **dadurch gekennzeichnet, dass** die nach unten geöffnete Verkleidung (44a), welche in dem zweiten Verbindungselement enthalten ist, im Wesentlichen vollständig mit Beton gegossen ist, und dass die Materialien von der vorderen Oberfläche (36) und den seitlichen Oberflächen (25) von dem vorragenden Teil (31) von dem Verbindungsadapter (21) ein Verwinden von der Verbindung in Relation zu der vertikalen Achse nach dem Gießen erlauben.

Revendications

1. Joint de console dissimulé pour des joints entre des éléments de charpente vertical et horizontal d'un bâtiment, particulièrement pour des joints d'une charpente en béton préfabriquée d'un bâtiment, où un élément de charpente horizontal, tel qu'une poutre en béton préfabriquée, est joint et fixée à un élément de charpente vertical, tel qu'une colonne en béton

préfabriquée, par l'intermédiaire d'un joint de transmission de charge,

ledit joint comprenant des premier et second éléments de joint, dont le premier élément de joint est installé dans l'élément de charpente vertical, tel qu'une colonne préfabriquée, alors que le second élément de joint est installé dans l'élément de charpente horizontal, tel qu'une poutre préfabriquée, ledit joint de console comprenant un adaptateur de joint (21), au moyen duquel un joint peut être formé en reliant les premier et second éléments de joint par l'intermédiaire de l'adaptateur susdit particulièrement sans aucune partie ne faisant saillie à partir de l'élément de charpente horizontal, ledit second élément de joint comprenant une fente ouverte vers le bas (42), à travers laquelle une partie saillante (31) de l'adaptateur de joint peut être installée dans le second élément de joint, lequel adaptateur de joint (21) reliant le joint est pourvu d'une face de butée (24) ou de faces de butée alors que le second élément de joint comprend un élément ou des éléments de butée (43), contre lesquels la face de butée d'adaptateur de joint (24) peut être installée,

dans lequel l'adaptateur de joint (21) reliant le joint au niveau de l'extrémité du premier élément de joint, également, possède une structure sensiblement en saillie et le premier élément de joint est pourvu d'une ouverture (6) à travers laquelle l'extrémité de l'adaptateur de joint peut être installée dans le premier élément de joint, ledit adaptateur étant conçu pour être installé dans le premier élément de joint sans aucun élément de fixation spécial,

caractérisé en ce que

le premier élément de joint possède une plaque de base horizontale inférieure (1) formée de deux parties de plaque sensiblement carrées, une partie de plaque supérieure et une partie de plaque inférieure, et un composant horizontal supérieur (5) formant une plaque supérieure, moyennant quoi ladite plaque de base (1) et ladite plaque supérieure conjointement à des composants (3) et (4) forment un espace en forme de boîte (3a),

l'adaptateur de joint comprend un premier élément de butée inférieur en saillie vers le bas (22), qui est une oreille, et un second élément de butée en saillie vers le haut (23), qui est un épaulement, lesquels éléments de butée sont destinés à être insérés dans l'espace en forme de boîte (3a) du premier élément de joint et le premier élément de joint possède des premier élément de butée de plaque de base et second élément de butée de plaque supérieure correspondants sous forme d'ouvertures ou de cavités et des faces de butée dans ladite plaque de base (1) et ladite plaque supérieure, ledit premier élément de butée de plaque de base étant formé par une ouverture rectangulaire (1a) dans la partie de plaque supérieure de ladite plaque de base inférieure (1), ledit

second élément de butée de plaque de base étant formé par une ouverture rectangulaire (9) dans ladite partie de plaque supérieure, de sorte que ledit premier élément de butée inférieur en saillie vers le bas (22) de l'adaptateur de joint (21) puisse être installé dans le premier élément de butée de plaque de base du premier élément de joint et ledit second élément de butée en saillie vers le haut (23) de l'adaptateur de joint (21) puisse être installé dans le second élément de butée de plaque supérieure du premier élément de joint, ledit second élément de butée en saillie vers le haut (23) de l'adaptateur de joint (21) entre en prise avec une face de butée dudit second élément de butée de plaque supérieure du premier élément de joint alors que ledit élément de butée inférieur en saillie vers le bas (22) de l'adaptateur de joint (21) entre simultanément en prise avec une face de butée comprise dans ladite ouverture (1a) de ladite première plaque de base (1) du premier élément de joint, et le second élément de joint possède un espace ouvert vers le bas (44a) pourvu d'une plaque d'extrémité (41) avec ladite fente ouverte vers le bas (42), le bord supérieur de ladite fente pourvu d'un élément de butée (43) adapté pour être supporté sur la surface supérieure (24) de l'adaptateur de joint de sorte que la poutre puisse être montée en la baissant à partir d'au-dessus directement vers le bas de sorte que l'adaptateur de joint (21) entre dans ladite fente (42), et que

il comprend un bloc de rehausse réglable (32), au moyen duquel le jeu vertical du joint peut être réglé en variant la hauteur de la surface (24) de l'adaptateur de joint.

2. Joint de console dissimulé selon la revendication 1, **caractérisé en ce que** l'adaptateur de joint (21) comprend une partie saillante (31) possédant une forme rectangulaire et des bords arrondis sur deux côtés, et la surface avant de la partie saillante placée contre le second élément de joint (40) est pourvue d'un remplissage (36) fait de matériau élastique ou mou.
3. Joint de console dissimulé selon la revendication 1, **caractérisé en ce qu'il** contient des éléments de réglage (27, 28) de forme rectangulaire ou similaire à un coin et d'épaisseurs différentes, lesquels éléments sont utilisés pour régler le jeu latéral et qui peuvent être placés entre les faces de butée (20, 25).
4. Joint de console dissimulé selon la revendication 1, **caractérisé en ce qu'un** bloc de butée (26) de l'adaptateur de joint (21) est comprimé de près contre les faces de butée (20) du second élément de joint.
5. Joint de console dissimulé selon la revendication 1,

caractérisé en ce que la partie saillante (22) de l'adaptateur de joint (21) repose sur une plaque (1) du premier élément de joint et sur une barre (2) placée sous elle.

6. Joint de console dissimulé selon la revendication 1, **caractérisé en ce que** l'espace ouvert vers le bas (44a) compris dans le second élément de joint est coulé sensiblement entièrement de béton, et que les matériaux de la surface avant (36) et des surfaces latérales (25) de la partie saillante (31) de l'adaptateur de joint (21) permettent la torsion du joint par rapport à l'axe vertical après la coulée.

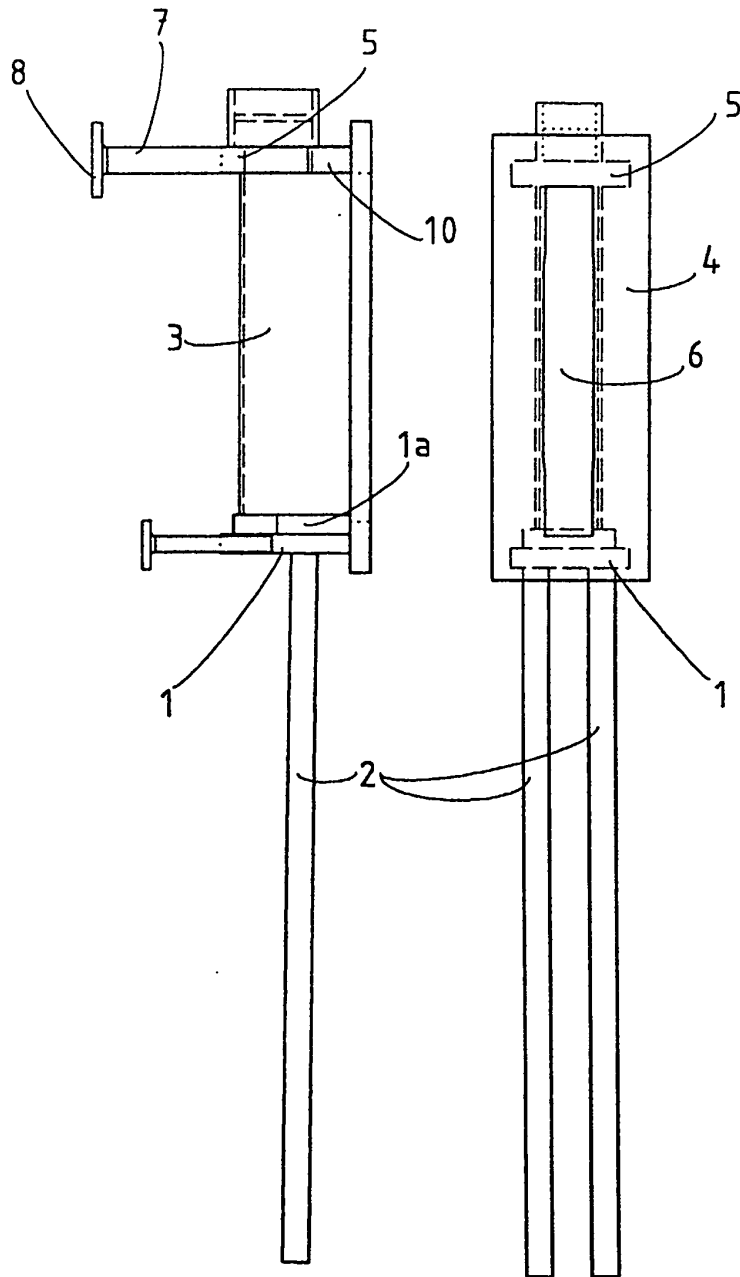


FIG. 1

FIG. 2

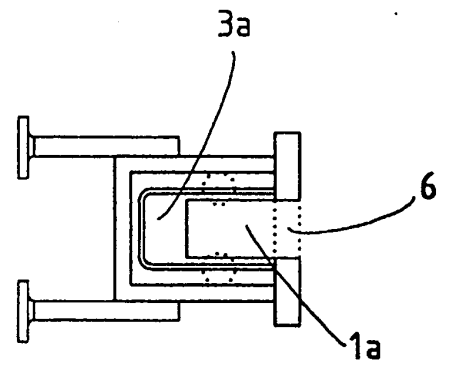


FIG. 3A

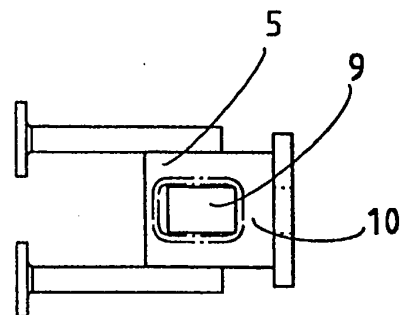


FIG. 3

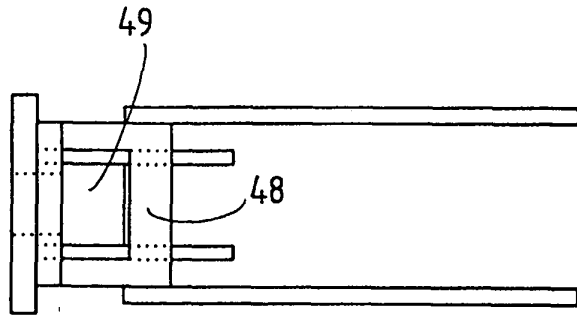


FIG. 5

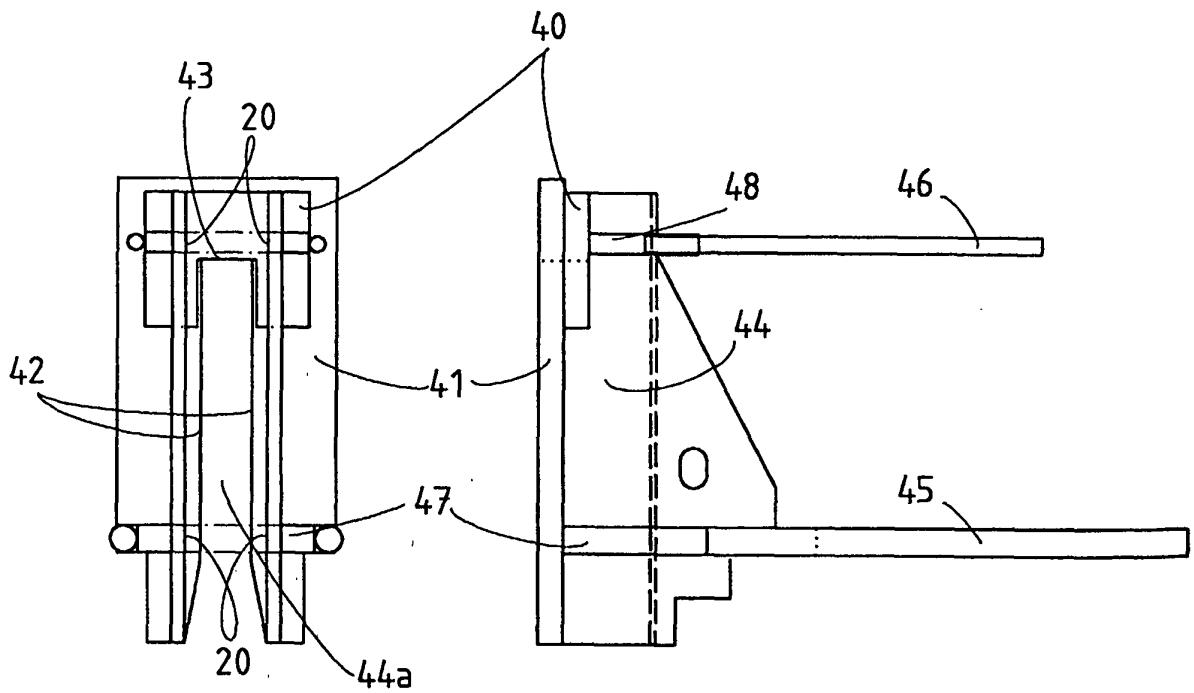


FIG. 6

FIG. 4

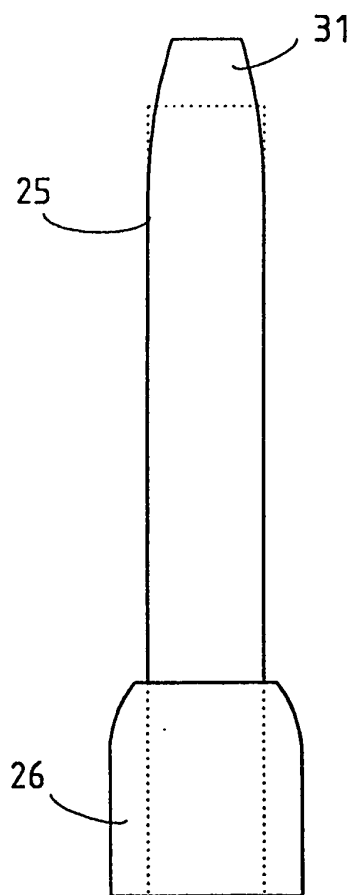


FIG. 8

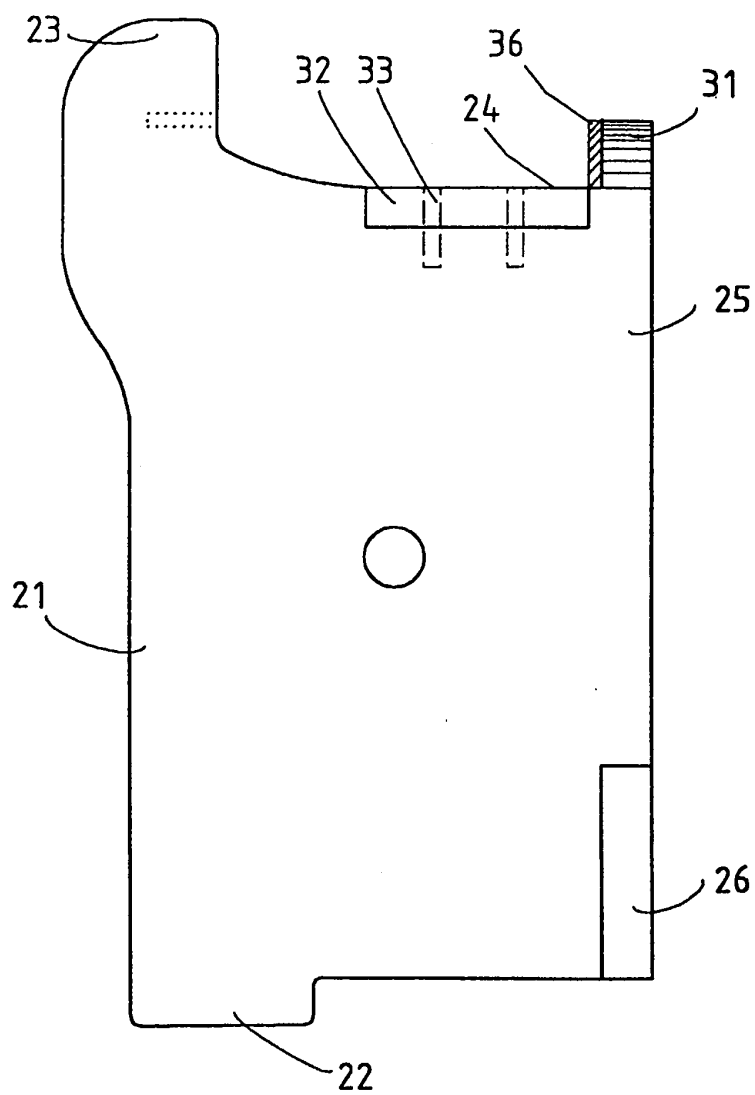


FIG. 7

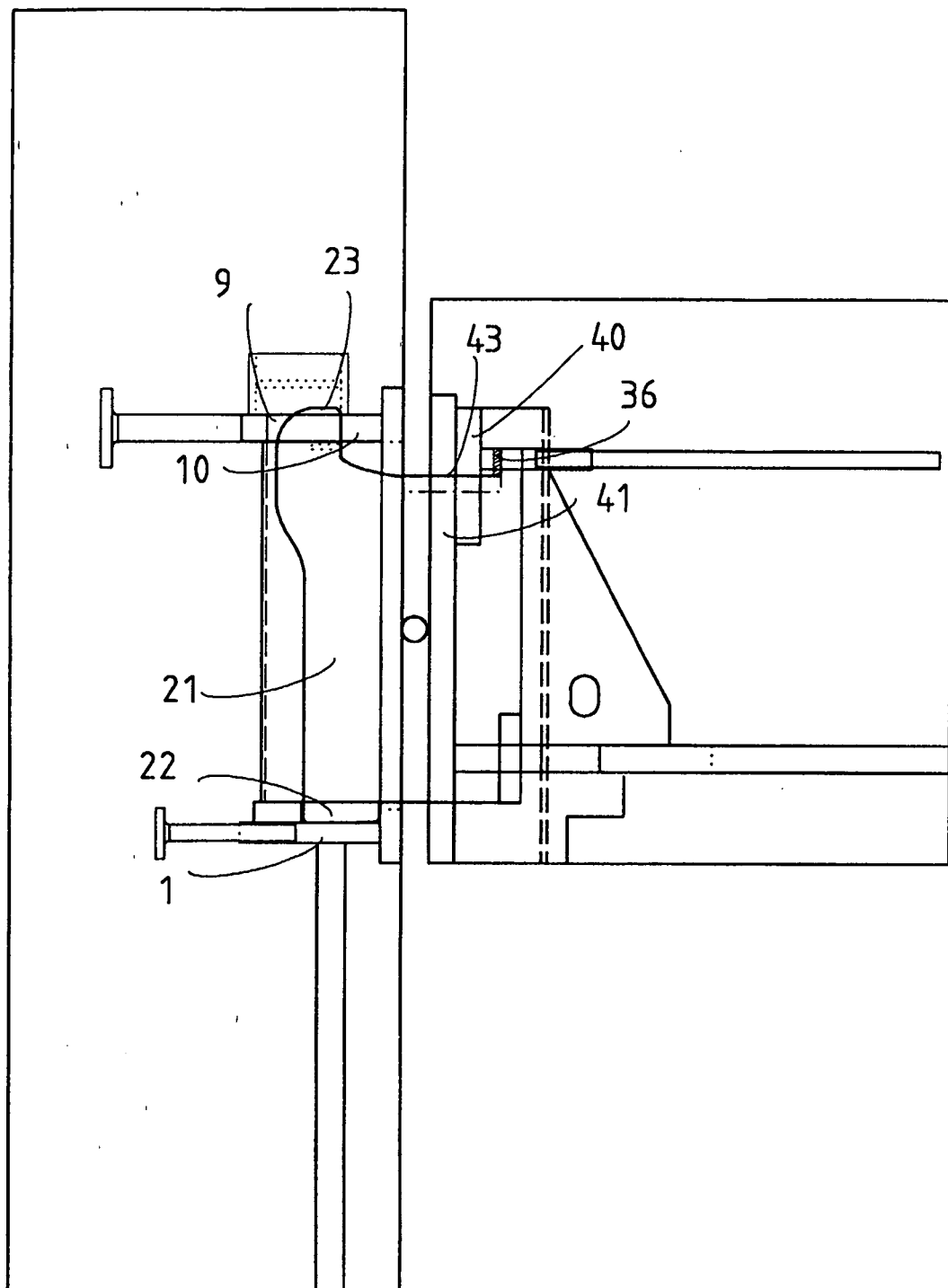


FIG. 9

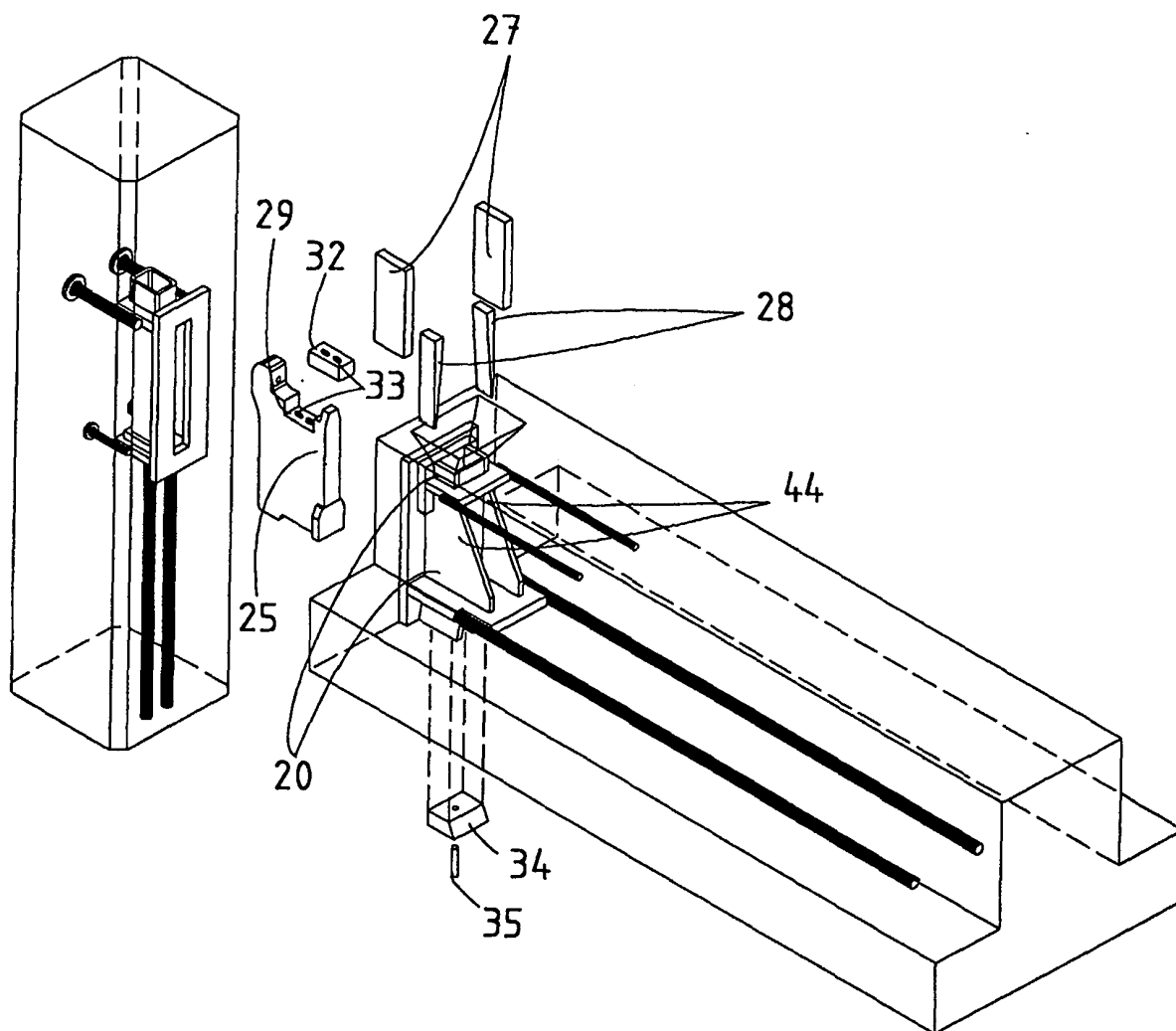


FIG. 10

REFERENCES CITED IN THE DESCRIPTION

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