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(54) **A METHOD FOR JOINING TWO STRUCTURAL MEMBERS BY THE AID OF AN ADJUSTABLE
FASTENER, AND A MOUNTING FOR USE WITH SAID METHOD**

VERFAHREN ZUM VERBINDEN ZWEIER BAUTEILE MIT HILFE EINES VERSTELLBAREN
HALTERS UND GESTELL ZUM GEBRAUCH MIT DIESEM VERFAHREN

PROCEDE DE JONCTION DE DEUX ELEMENTS DE STRUCTURE A L'AIDE D'UN DISPOSITIF DE
FIXATION REGLABLE, ET CHASSIS UTILISE DANS LEDIT PROCEDE

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SE-B- 0 457 206

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Description

The invention relates to a method and a means for a permanent adjustable joining of two structural members, where the structural members comprise a door or window frame on one hand and a surrounding stationary building structure on the other hand, which is displaced relative to the frame so that a direct joining of both structural members is not possible.

It is known to use adjustable fastening means in connection with the installation of frames, sashes or the like in adapted openings in building structures of various kinds. Such adjustable fastening means are, inter alia, disclosed in NO-PS Nos. 152,807, and 155,784, and in NO Patent Application No. 884,753, the inventor of which is the same as in the present application.

According to the above specifications the fastening means essentially consists of a hollow holder means, which is internally threaded and is mounted in an adapted through hole in a sash or a frame to be joined with a surrounding building structure, on the side facing said building structure. The holder means is firmly locked into a desired position by the aid of an additional locking ring or by being provided with a locking means of its own. The fastening means according to known technology, furthermore, comprises a force transmitting member, which is externally threaded to be screwed into said holder means, and which has a head to contact the surrounding building structure. The force transmitting member also has a through hole which is completely or partly designed with a polygonal cross section, and adjacent to said head has a stop for the head of a screw, which may be inserted from the other side of the frame into the force transmitting member, so as to be screwed into the building structure, thus, to secure the force transmitting member to the latter. When said screw is not tightened to lock the force transmitting member firmly to the building structure, the force transmitting member may be turned in one or the other direction by insertion of a tool into the hole on the inside of the frame and in engagement with the polygonal hole of the force transmitting member. In this manner it is possible to adjust the distance between the frame and the surrounding building structure. Obviously, all four outsides of the frame or sash must be provided with at least one adjustable fastening means of the mentioned kind.

As regards most smaller and more lightweight frames, sashes, etc. of wood material, however, it was found that sufficient stability may be achieved when the force transmitting member is mounted directly on a preliminary threaded hole in a frame, or a sash, respectively, i.e. without use of a holder means which is preferably made from metal. In this case the force transmitting member proper forms the adjustable fastening means, which is the designation used in the following.

Joining such structural members as mentioned by the aid of adjustable fastening means previously depended on the fact that the structural members could be

arranged directly opposite each other, so that, e.g. a window frame may be fastened directly to the surrounding building structure.

In connection with certain building methods it is common to install, e.g. window and door frames upon erecting the internal wall, but before insulation and external wall/facade is erected. In connection with such building methods said frames are to be provided outside the internal wall, since e.g. windows are after all to form part of the facade of the building. In case of rehabilitation of old buildings existing facades are to be provided with an insulating layer, and outside such an insulating layer a new facade/external wall is mounted. In case of such rehabilitation, e.g. window frames, etc. must be installed further outside and more closely to the facade, and according to known building methods this is carried out before insulation and facade are mounted. With the mentioned building methods adjustable fastening means could not be utilized previously for the above reasons. Window frames were fastened in various manners in case of said building methods. One method was to use angular steel one arm of which is fastened to the internal wall, or an older existing facade, respectively, whereas the second projecting arm is used for fastening a window frame or the like. Another method was to provide the internal wall, or older existing facade, respectively, with a frame structure which then served to secure, e.g. the window frame.

The above known technology does not permit readjustment of the position of the installed frame, and installation proper of the frame, thus, requires high accuracy. The method, thus, requires much labour and is time consuming. Said method with installation of an additional frame structure is also very expensive.

SE-A-457007 discloses a fastening means for joining of a door or window frame and a surrounding stationary building structure. The fastening means comprise a plate having a projecting portion, a snap device and a screw for mounting the device in the door or window frame. The projecting portion of the plate is further provided with a bead for a joint action by means of friction with a corresponding groove in the snap device. The screw involved is just an ordinary cone screw which allows only once an adjustment before the elements are joined together. The plate must be mounted against within the stationary building structure due to the shape and is fastened with four screws in each corner. Therefore this mounting cannot be used where the opposite window or door frame do not match with the surrounding stationary building frame due to insulation etc. and said plate cannot be adjusted outside the surrounding stationary building frame. Further, it has to be noted that before mounting of the plate and the device, an extensive measuring is required since it is almost impossible to adjust the elements in relation to each other after the two parts have been mounted. Further, since the elements are only interconnected by a snap function, a relative adjustment would likely make the elements to dis-

connect.

SE-B-457206 discloses a method and a means for direct permanent joining of two structural members having joining surfaces facing each other, wherein said arrangement comprises an adjustable fastening means in direct contact with both structural members. Said adjustable fastening means has an external thread engaging a threaded sleeve inserted into the first structural member, and a through hole with a stop for an insertion of a screw, which is directly screwed into the second structural member.

SE-B-427486 reveals a general adjustable mounting assembly comprising a flat mount with an elongated insertion hole and an angled mount having a threaded bolt to engage said insertion hole and to fix both mounts in an adjustable position relatively to each other. Both mounts are fixed none adjustable to respective members to be joined, and only angular and lateral adjusting is possible.

It was an object of the present invention to provide a technical concept permitting adjustable fastening means to be used for mounting, e.g. window and door frames in case a stationary building structure does not directly surround said frame, i.e. when two building structures to be joined are slightly displaced mutually and, thus, are not directly opposite to each other.

According to the invention, this object is achieved by method according to claim 1 and a means according to claim 4.

Preferred advantageous further embodiments of the method are claimed in subclaims 2 and 3, whereas preferred advantageous embodiments of the means are stated in subclaims 5 - 9.

According to the invention, the method and the means for permanent adjustable joining of two structural members advantageously involve an actual adjustment between the door window frame and the mounting through the fastening means same as a turnable adjustment thereof through a screw. Further, also a radial adjustment between the mounting and the building structure is provided through slot-shaped cut-outs, if only one screw is used and not tightened.

According to a preferred embodiment the fastening means is firmly screwed onto the mounting by the aid of a screw which is inserted into the through hole of the fastening means, which is surrounded by a bead-like projection which is at the same time squeezed into and to engagement with an adapted recess in the end portion of the fastening means. This fastening method results in a very strong joint and with a wide margin satisfies all known requirements as regards resistance against any loads.

Alternative embodiments may involve either firm screwing the fastening means to the mounting, or only using a bead on the mounting, which is then squeezed into and in engagement with a recess adapted to said bead in the end portion of the fastening means.

According to the invention a means having a mount-

ing is also provided, said mounting preferably comprising a disk which is provided with cut-outs for insertion of screws or the like to be fastened to the building structure, said disk having in its end projecting completely or partly from said building structure a fastening member for the adjustable fastening means. Said disk may be plane or shaped, e.g. with a bend in a desired manner.

In order to permit adjustment of the position of the mounting and thus, to achieve a high degree of flexibility as regards adjustment, one or more of the cut-outs of the mounting may be designed like a slot/slots.

A preferred embodiment of the fastening means will comprise a threaded hole surrounded by a bead. The advantage of such a design of the fastening means of the mounting will appear from the above disclosure.

Alternative embodiments of the fastening means could also be just a threaded hole or just a bead adapted to a cut-out in one end of the adjustable fastening means.

An embodiment of the invention is disclosed in more detail below with reference to the figures of the drawing, in which

- Figure 1 shows a perspective view of a mounting, and
 Figure 2 shows a sectional view of the fastening means and the mounting ready for joining a window frame and a building structure which is situated inside.

Figure 1 shows a mounting 1 with a slot-shaped cut-out 2 for insertion of a screw for attaching the mounting 1 to a support. The slot-shaped cut-out 2 permits a certain adjustability of the mounting 1 when the screw is not too firmly tightened. Cut-out 3 serves for insertion of a screw and fastening of mounting 1 upon adjustment of the mounting into a desired position. 4 designates a threaded hole in the mounting 1, and 5 is a bead-like projection which is also threaded.

Figure 2 shows an adjustable fastening means 6 which is mounted and ready for joining a window frame 15 to a building structure 18 which extends at the rear relative to said window frame. Fastening means 6 is mounted in a through and partly or completely threaded hole 16 in window frame 15. Originally, and during storage, transport, etc. a head 7 of the fastening means was screwed into and, thus, recessed in a self-made groove 17 in the frame 15. The head 7 of the fastening means is, in fact, provided with cutting edges 8. From this recessed position fastening means 6, which is provided with threads 9, is screwed slightly out of frame 15, so that the head 7 contacts the mounting 1. Such turning/screwing of fastening means 6 is either achieved by insertion of a tool through hole 16 in frame 15 into engagement with the polygonal hole 10 of fastening means 6, or by the aid of a tool which is inserted through the space between mounting 1 and frame 15 to engage the polygonally shaped head 7 of the fastening means 6. By the

aid of a screw or the like through slot-shaped hole 2 the mounting 1 is secured to the building structure 18 in advance. When fastening means 6 is firmly mounted to mounting 1 it will be possible to adjust the position of mounting 1 slightly in that the mounting with a screw screwed into slot-shaped cut-out 2 may be displaced slightly in a desired direction. When the mounting 1 is in the desired position a screw or the like is inserted into cut-out 3 for final firm attachment of the mounting 1 to the building structure 18. At the end of the fastening means 6 which will contact the mounting 1 the fastening means is in the shown embodiment provided with a cut-out 11 which is adapted so as to closely surround and engage with the bead-like projection 5 of the mounting 1. The fastening means 6 is additionally secured to the mounting 1 by having a threaded screw 13 inserted into its through hole 10, which screw 13 is screwed into threaded projection 5 as well as hole 4 of the mounting 1, preferably in such a manner that head 14 of the screw is in contact with a stop 12 in the through hole 10 of the fastening means 1.

It will be understood that when fastening means 6 is attached to mounting 1 in the manner disclosed above, the fastening means 6 may still be turned about its axis for adjusting the space between the window frame 15 and the building structure 18. Readjustment of the position of the mounting 1 will be possible as well, if desired, by temporary removal of the screw in hole 3 and slightly loosening the screw in the slot-shaped hole 2. Now the mounting 1 may be slightly displaced.

Claims

1. A method for permanent adjustable joining of two structural members, consisting of a door or window frame (15) on the one hand and a surrounding stationary building structure (18) on the other hand which is displaced relative to the frame (15), comprising the following steps:

providing in said frame (15) a threaded hole (16) for receiving a threaded fastening means (6), which has a through hole (10) in its longitudinal direction with a polygonal portion for engagement by a tool to turn the fastening means (6) relative to the frame (15) for adjusting the space between the frame (15) and the building structure (18);

providing a mounting (1) having a completely or partly projecting engagement portion (5) and securing it through a slot-shaped hole (2) in advance to the building structure (18);
rotatably mounting the fastening means (6) to the engagement portion (5) of the mounting (1);
adjusting the position of the mounting (1) by displacing it relatively to the building structure (18); and

finally attaching the mounting (1) firm to the building structure (18).

2. A method according to claim 1, wherein the fastening means (6) is mounted to the projection (5) by engagement of the end of its through hole (10).
3. A method according to claim 1 or 2, wherein the fastening means (6) is firmly screwed onto the mounting (1) by the aid of a screw (13), which is inserted into said through hole (10) of the fastening means (6), after the mounting (1) is firmly attached to the building structure (18).
4. A means for permanent adjustable joining of two structural members, consisting of a door or window frame (15) on the one hand and a surrounding stationary building structure (18) on the other hand which is displaced relative to the frame (15), comprising:

a fastening means (6) having a through hole (10) with a polygonal portion in its longitudinal direction and an external thread (9) for adjustable mounting thereof in a threaded hole (16) of a frame (15) by turning of a tool inserted into said polygonal portion of said fastening means (6);
said through hole (10) of said fastening means (6) having a stop (12) for a screw head or the like at the end projecting from the frame (15),

characterized by

a mounting (1) for attachment to said building structure (18) having a completely or partly projecting engagement portion (5) for rotatably receiving said fastening means (6); and
a screw (13) for mounting said fastening means (6) to said engagement portion (5).

5. The means according to claim 4, wherein said mounting (1) comprises slot-shaped cut-outs (2, 3) for adjustability in the vertical and/or horizontal plane.
6. The means according to claim 4 or 5, wherein said mounting consists of a disk which may be bent in a desired manner.
7. The means according to one of claims 4 - 6, wherein the engagement portion (5) consists of a bead-like projection.
8. The means according to one of claims 4 - 7, wherein said engagement portion (5) comprises a threaded hole (4) for engagement by said screw (13).

9. The means according to claim 8, wherein said threaded hole (4) extends also through said mounting (1).

Patentansprüche

1. Verfahren zum permanenten einstellbaren Verbinden zweier Strukturelemente bestehend aus einer Tür oder einem Fensterrahmen (15) einerseits und einer umgebenen stationären Gebäudestruktur (18) andererseits, welche relativ zum Rahmen (15) verschoben wird, mit folgenden Schritten:

Vorsehen eines Gewindelochs (16) in dem Rahmen (15) zum Aufnehmen einer Befestigungseinrichtung (6) mit einem Gewinde, die ein Durchgangsloch (10) in ihrer Längsrichtung mit einem polygonalen Abschnitt zum Eingriff für ein Werkzeug zum Drehen der Befestigungseinrichtung (6) relativ zum Rahmen (15) zum Einstellen des Raums zwischen dem Rahmen (15) und der Gebäudestruktur (18) aufweist;

Vorsehen einer Montageeinrichtung (1) mit einem vollständig oder teilweise vorstehenden Eingriffsabschnitt (5) und Anbringen derselben im voraus durch ein schlitzförmiges Loch (2) an die Gebäudestruktur (18);

drehbares Anbringen der Befestigungseinrichtung (6) an dem Eingriffsabschnitt (5) der Montageeinrichtung (1);

Einstellen der Position der Montageeinrichtung (1) durch Verschieben derselben relativ zur Gebäudestruktur (18); und

endgültiges Anbringen der Montageeinrichtung (1) fest an die Gebäudestruktur (18).

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die Befestigungseinrichtung (6) auf dem vorstehenden Abschnitt (5) durch Eingriff des Endes ihres Durchgangslochs (10) angebracht wird.
3. Verfahren nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Befestigungseinrichtung (6) fest auf die Montageeinrichtung (1) mit Hilfe einer Schraube (13), die in das Durchgangsloch (10) der Befestigungseinrichtung (6) eingesetzt wird, nachdem die Montageeinrichtung (1) fest an der Gebäudestruktur (18) angebracht ist, geschraubt wird.
4. Einrichtung zum permanenten einstellbaren Verbinden zweier Strukturelemente bestehend aus einer Tür oder einem Fensterrahmen (15) einerseits

und einer umgebenden stationären Gebäudestruktur (18) andererseits, die relativ zum Rahmen (15) verschiebbar ist, mit:

einer Befestigungseinrichtung (6) mit einem Durchgangsloch (10) mit einem polygonalen Abschnitt in seiner Längsrichtung und einem Außengewinde (9) zum einstellbaren Anbringen derselben in einem Gewindeloch (16) eines Rahmens (15) durch Drehen eines in den polygonalen Abschnitt der Befestigungseinrichtung (6) eingesetzten Werkzeugs;

wobei das Durchgangsloch (10) der Befestigungseinrichtung (6) ein Anschlag (12) für einen Schraubkopf oder dergleichen, der am Ende von dem Rahmen (15) vorsteht, aufweist,

gekennzeichnet durch

eine Montageeinrichtung (1) zur Anbringung an die Gebäudestruktur (18) mit einem vollständig oder teilweise vorstehenden Eingriffsabschnitt (5) zum drehbaren Aufnehmen der Befestigungseinrichtung (6); und

eine Schraube (13) zum Anbringen der Befestigungseinrichtung (6) an dem Eingriffsabschnitt (5).

5. Vorrichtung nach Anspruch 4, dadurch gekennzeichnet, daß die Montageeinrichtung (1) schlitzförmige Ausschnitte (2, 3) zur Einstellbarkeit in der vertikalen und/oder horizontalen Ebene aufweist.

6. Vorrichtung nach Anspruch 4 oder 5, dadurch gekennzeichnet, daß die Montageeinrichtung aus einer Platte besteht, die in einer erwünschten Art und Weise biegsam ist.

7. Vorrichtung nach einem der Ansprüche 4 bis 6, dadurch gekennzeichnet, daß der Eingriffsabschnitt (5) aus einer bündelartigen Auskragung besteht.

8. Vorrichtung nach einem der Ansprüche 4 bis 7, dadurch gekennzeichnet, daß der Eingriffsabschnitt (5) ein Gewindeloch (4) zum Eingriff mit der Schraube (13) aufweist.

9. Vorrichtung nach Anspruch 8, dadurch gekennzeichnet, daß das Gewindeloch (4) ebenfalls durch die Montageeinrichtung (1) verläuft.

Revendications

1. Procédé pour l'assemblage réglable permanent de deux éléments structuraux, constitués d'une part

d'un dormant de porte ou de fenêtre (15) et d'autre part, d'une structure de construction fixe environnante (18) qui est décalée par rapport au dormant (15), comprenant les étapes suivantes :

- prévoir ledit dormant (15) un orifice taraudé (16) pour recevoir un moyen de fixation fileté (6), qui présente un orifice débouchant (10) dans sa direction longitudinale avec une partie polygonale pour coopérer avec un outil afin de faire tourner le moyen de fixation (6) par rapport au dormant (15) pour régler l'écart entre le dormant (15) et la structure de construction (18);
- fournir une ferrure (1) ayant une partie de coopération (5) complètement ou partiellement en saillie et la fixer à travers un trou oblong (2) en avant de la structure de construction (18);
- monter à rotation le moyen de fixation (6) sur la partie de coopération (5) de la ferrure (1);
- régler la position de la ferrure (1) en la déplaçant par rapport à la structure de construction (18); et
- finalement fixer fermement la ferrure (1) à la structure de construction (18).

2. Procédé selon la revendication 1, dans lequel le moyen de fixation (6) est monté sur la saillie (5) par l'engagement de celle-ci dans l'orifice débouchant (10).

3. Procédé selon la revendication 1 ou 2, dans lequel le moyen de fixation (6) est fermement vissé sur la ferrure (1) à l'aide d'une vis (13), qui est introduite dans ledit orifice débouchant (10) du moyen de fixation (6), après que la ferrure ait été fixée fermement à la structure de construction (18).

4. Moyen pour l'assemblage réglable permanent de deux éléments structuraux, composé d'une part, d'un dormant de porte ou de fenêtre (15) et d'autre part, d'une structure de construction fixe environnante (18) qui est décalée par rapport au dormant (15), comprenant :

- un moyen de fixation (6) présentant un orifice débouchant (10) avec une partie polygonale dans sa direction longitudinale et un filetage extérieur (9) pour le monter de façon réglable dans un orifice taraudé (16) du dormant (15) en faisant pivoter un outil introduit dans ladite partie polygonale dudit moyen de fixation (6),
- ledit orifice débouchant (10) dudit moyen de fixation (6) présente un arrêt (12) pour une tête de vis ou analogue à l'extrémité en saillie par rapport au dormant (15),
- caractérisé par une ferrure (1) pour la fixation à ladite structure de construction (18) ayant une partie de coopération (5) complètement ou par-

tiellement en saillie pour recevoir de manière rotative ledit moyen de fixation (6), et par

- une vis (13) pour monter ledit moyen de fixation (6) à ladite partie de coopération (5).

5. Moyen selon la revendication 4, dans lequel ladite ferrure (1) comprend des évidements oblongs (2,3) pour le réglage dans le plan vertical ou/et horizontal.

6. Moyen selon la revendication 4 ou 5, dans lequel ladite ferrure se compose d'un disque qui peut être plié d'une façon souhaité.

7. Moyen selon l'une quelconque des revendications 4 à 6, dans lequel la partie de coopération (5) est composée d'une saillie en forme de téton.

8. Moyen selon l'une quelconque des revendications 4 à 7, dans lequel ladite partie de coopération (5) comprend un orifice taraudé pour coopérer avec ladite vis (13).

9. Moyen selon la revendication 8, dans lequel ledit orifice taraudé (4) s'étend aussi à travers ladite ferrure.

Fig.1

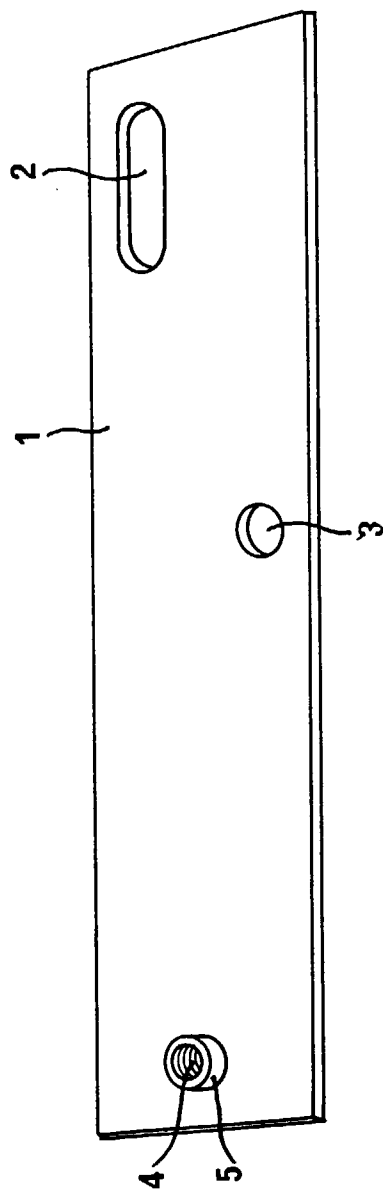


Fig.2

