Profiled hinge joint.

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Description

The invention relates to a profiled hinge joint having joint wings in the form of first and second U-shaped and profiled frame members, said first U-shaped frame member being provided with a flange carrying a bead member of partly circular cross-section and having a restricted portion in its cross-section extending longitudinally of the frame member, said second U-shaped frame member having a channel-shaped curved part extending longitudinally of this frame member, which channel-shaped curved part embraces said bead member.

These profiled hinge joints, mostly made of extruded aluminium, are used for sectional door structures and the like and are so designed that the panels can hinge with respect to each other when the door structure is opened and closed, both ends of the panels being guided in guide tracks which are laterally positioned of the door opening.

To facilitate the installation of a door structure, the profiled hinge joint is so designed that the panels can be hooked into each other when the panel to be hooked in, is in a position outside of the range of hinging when the door structure is used.

Such a hinge joint is known from the DE—A—1,509,191. In this known profiled hinge joint U-shaped frame members are used with the open side directed towards each other. The bead member and the channel-shaped curved part are positioned at the free ends of the lateral flanges of the frame members with the result that the parts hooked together are positioned at the weakest place of the hinge joint. This means that no long panels can be used as parts of the hinge joint come apart when the door is subjected to the wind pressure during opening or closing of the door. Further the parts of the hinge joint come apart during opening of the door as a result of bending of the panels when they reach the horizontal part of the guide tracks above the door opening. Further the upright flanges of the frame member form a space in which rain water and snow can accumulate, which snow can melt for instance by warming up of the door by the sun and during the night the melted snow will become a frozen block preventing the door from opening.

It is an object of the present invention to so improve the construction of a profiled hinge joint that relatively large panels are easily capable of engaging each other and which will withstand wind pressure and bending of the panels without the possibility of the frame members coming apart. Another drawback of this known hinge joint is that no sandwich filling panels made of two plates spaced apart by foam material therebetween can be used in connection with the hinge joint without any auxiliary profiles for fastening the hinge joint to such panels.

It is a further object of the present invention to so improve the construction of a similar profiled hinge joint that sandwich panels can be easily fixed to the frame members and that the frame members will withstand bending forces without coming apart of the frame members. According to the present invention this object is obtained by utilizing a profiled hinge joint of the type as described hereinbefore and is characterized in that the flange is located at the corner of the first U-shaped frame member between a web or central part and a lateral flange of this U-shaped frame member, which flange is inclined away from the plane of said lateral flange towards said web and the bead member has its restricted portion in its outer wall at the junction between the bead member and the outer inclined surface of the inclined flange and that the channel-shaped curved part is situated at a corner of the second U-shaped frame member between a lateral flange and a web or central part of the second U-shaped frame member, which web abuts on the adjacent web of the first U-shaped frame member when the lateral flanges of both U-shaped frame members are in alignment with each other. This presents the advantage that when the frame members are in alignment with each other the webs or central parts of the frame members are adjacent and abut each other and no sand or snow can enter the hinge joint. Further, sandwich panels can be easily inserted between the flanges of the U-shaped frame members and the hinge joint has a large resistance to bending either by wind forces or by bending of the panels when they enter a horizontal part of the guide tracks.

From US—A—2,880,796 a profiled hinge joint is known in which the frame members have parallel flanges extending in the direction of the panels of a door and a sandwich panel comprising two plates and foam material therebetween can be inserted into the space defined by the parallel flanges. However, the bead member and the channel-shaped curved part extends in a space between the webs of central parts of the frame members. Additional flanges are provided on the webs in order to close the space between the webs. However as soon as the panels hinge with respect to each other snow can enter in the space between the webs and additional flanges. Further the channel-shaped curved part extends from the web of the frame member and as a result of which it does not have sufficient resistance against the forces which occur when the panels of a door are pivoted to enter the horizontal part of the guiding tracks and the frame members can come apart. For this reason the width of the door is limited and no large panels can be obtained with such a hinge joint.

According to the invention a practical embodiment of the profiled hinge joint is characterized in that a retracted curved wall is formed as a connection between the web and a lateral flange of a U-shaped frame member.

The invention relates also to a door divided transversely into panels capable of relative pivotal movements about axes along the lines of division and the adjoining panels are connected
to each other by a profiled hinge joint according to the invention, which door is characterized in that the adjoining webs of the U-shaped frame members abut against each other and the bead member and the channel-shaped part are positioned in a space between the adjoining webs and the adjacent lateral flanges of the U-shaped frame members when the panels of the door are in alignment with each other. Further a door according to the invention may be adapted for mounting between guiding tracks of inwardly faced channel sections and each panel has been provided with a guide roller for each track. Such a door is characterized in that the guide roller has its shaft mounted within a hole in the bead member of the hinge joint and cooperates with a first flange of the guiding track spaced from a second flange, the flange cooperating with the guide roller being shorter than the second flange to permit a lateral insertion of the panels with a guide roller.

The invention will now be illustrated by way of example with reference to the accompanying drawings, in which:

- Figure 1 is a perspective view of a lifting door provided with profiled hinge joint members in accordance with the invention;
- Figure 2 is a cross-sectional view of a profiled hinge joint as disposed between two panels of the lifting door shown in Figure 1;
- Figure 3 is a strongly enlarged, cross-sectional view of a detail in Figure 2;
- Figure 4 is a plan view of a profiled hinge joint member mounted in a lifting door, having a roller in a guide rail;
- Figures 5—8 are sectional views, as shown in Figure 3, wherein the joint wings are in different positions with respect to one another, and
- Figure 9 is a section, identical to the one in Figure 2, wherein a roller has been mounted in the hinge joint member.

In the case of lifting doors, which do not have enough space above the door opening, guide rails are used which are curved above the door, in the door then being composed of panels 1 being hingedly attached to each other. At the location of the hinge joints there are mounted on the side edges of the doors, rollers 2 which are adapted to fit into the guide rails 3a and 3b. As is clearly visible in Figure 1, the guide rails 3a and 3b change into a curved portion mounted to the ceiling or other holding means. On lifting the door, the panels 1, while moving, assume different positions with respect to one another until they have arrived in the curved portion when the door has been opened completely.

To this end the panels 1 are provided with profiled hinge joints in the form of a profiled lower frame 4 and a profiled upper frame 5.

The manner in which the door is elevated, for example by means of a drive mechanism, will not be described as this does not form part of the subject matter of the present invention.

The lower frame 4 is provided with a hollow bead member 6, being connected with a side flange 7 of the frame 4.
As a result, draught strips 23 can be arranged between the flanges 12 and 9 so that a door comprising panels 1 provides a good, wind-proof seal in a closed position. The roller 2 is then resting against the flange 21 of a guide rail 3a or 3b.

Claims

1. A profiled hinge joint having joint wings in the form of first and second U-shaped and profiled frame members, said first U-shaped frame member (4) being provided with a flange carrying a bead member (6) of partly circular cross-section and having a restricted portion (18) in its cross-section extending longitudinally of the frame member, said second U-shaped frame member (5) having a channel-shaped curved part (11) extending longitudinally of this frame member, which channel-shaped curved part embraces said flange, characterized in that said flange is located at the corner of the first U-shaped frame member (4) between a web (9) or central part and a lateral flange (7) of this U-shaped frame member, which flange is inclined away from the plane of said lateral flange (7) towards said web (9) and the bead member has its restricted portion (18) in its outer wall at the junction between the bead member and the outer inclined surface of said inclined flange and that the channel-shaped curved part is situated at a corner of the second U-shaped frame member (5) between a lateral flange and a web (12) or central part of the second U-shaped frame member which web (12) abuts on the adjacent web (9) of the first U-shaped frame member when the lateral flanges of both U-shaped frame members are in alignment with each other.

2. A profiled hinge joint according to claim 1, characterized in that a retracted curved wall (8) forms the junction between the web (9) and said lateral flange (7) of the first U-shaped frame member (4).

3. A door divided transversally into panels (1) capable of relative pivotal movements about axes along the lines of division, the adjoining panels being connected to each other by a profiled hinge joint according to claim 1 or claim 2, characterized in that the adjoining webs (9, 12) of the U-shaped frame members (4, 5) abut against each other and the bead member (6) and the channel-shaped part (11) are positioned in a space between the adjoining webs (9, 12) and the adjacent lateral flanges of the U-shaped frame members (4, 5) when the panels of the door are in alignment with each other.

4. A door according to claim 3, adapted for mounting between guiding tracks (3a, 3b) of inwardly faced channel sections and each panel has been provided with a guide roller (2) for each track, characterized in that the guide roller (2) has its shaft (20) mounted within a hole (19) in the bead member (6) of the hinge joint and cooperates with a first flange (21) of the guiding track (3a; 3b) spaced from a second flange, the flange (21) cooperating with the guide roller being shorter than the second flange to permit a lateral insertion of the panel with a guide roller.

Patentansprüche


2. Profilierte Scharnierverbindung nach An- spruch 1, dadurch gekennzeichnet, daß eine zu- rückgesetzte gekrömmte Wand (8) die Verbin- dung zwischen dem Stag (9) und dem lateralen Flansch (7) des ersten U-förmigen Rahmenele- ments (4) bildet.

3. In Querrichtung in Paneele (1) unterteilte Tür, welche relative Schwenkbewegungen um Achsens- entlang der Teilungslinien ausführen kann, wobei die aneinandergrenzenden Paneele miteinander durch eine profilierte Scharnierverbindung ge- mäß Anspruch 1 oder 2 verbunden sind, dadurch gekennzeichnet, daß die benachbarten Stege (9, 12) der U-förmigen Rahmenelemente (4, 5) anein- anderliegen und das Wulstelement (6) und der kanalförmige Teil (11) in einem Raum zwischen den aneinandergrenzenden Stegen (9, 12) und den benachbarten lateralen Flanschen der U- förmigen Rahmenelemente (4, 5) gelegen sind, wenn die Paneele der Tür zueinander ausgerichtet sind.

4. Tür nach Anspruch 3, die zur Montage zwischen Führungsschienen (3a, 3b) aus einwärts gerichteten Kanslab schnitten ausgebildet ist, wobei jedes Paneel mit einer Führungsrolle (2) für
jede Schiene versehen ist, dadurch gekennzeichnet, daß die Führungsrolle (2) mit ihrer Welle (20) in einem Loch (19) in dem Wulstelement (6) der Scharnierverbindung montiert ist und mit einem ersten Flansch (21) der Führungsschiene (3a; 3b) zusammenwirkt, der im Abstand zu einem zweiten Flansch angeordnet ist, und daß der mit der Führungsrolle zusammenwirkende Flansch (21) kürzer ist als der zweite Flansch, um ein seitliches Einsetzen des Paneels mit einer Führungsrolle zu gestatten.

Revendications

1. Articulation de charnière profilée ayant des ailes formées d’un premier et d’un second élément support profilé en U, ledit premier élément support (4) en U étant pourvu d’un bord portant un bourrelet (6) de la section droite partiellement circulaire dont une partie longitudinale amincie (18), le second support (5) en U ayant une partie courbe longitudinale (11) en forme de canal, cette partie courbe enserrant ledit bourrelet, caractérisée en ce que ledit bord est situé en un coin du premier support en U (4) entre une base (9) ou partie centrale et un flanc latéral (7) de ce support en U, ce bord étant incliné en s’éloignant du plan dudit flanc latéral (7) vers la base (9) et le bourrelet ayant sa partie amincie (18) dans sa paroi extérieure à la jonction entre le bourrelet et la face extérieure inclinée dudit bord incliné et la partie courbe en forme de canal étant située en un coin du second support en U (5) entre un flanc latéral et une base (12) ou partie centrale du second support en U, cette base (12) touchant la base adjacente (9) du premier support en U quand les bords latéraux des deux supports en U sont dans l’alignement l’un de l’autre.

2. Articulation de charnière profilée selon la revendication 1, caractérisée en ce que une paroi incurvée en retrait (8) forme la jonction entre la base (9) et ledit flanc latéral (7) du premier support en U (4).

3. Porte divisée transversalement en panneaux (1) capables de mouvements pivotants relatifs autour d’axes le long des lignes de division, les panneaux adjacents étant reliés entre eux par une articulation de charnière profilée selon la revendication 1 ou la revendication 2, caractérisée en ce que les bases adjacentes (9, 12) des supports en U (4, 5) viennent en contact l’une de l’autre et en ce que le bourrelet (6) et la partie en forme de canal (11) sont positionnés dans un espace entre les bases adjacentes (9, 12) et les bords latéraux adjacents des supports en U (4, 5) quand les panneaux de la porte sont dans l’alignement l’un de l’autre.

4. Porte selon la revendication 3, adaptée pour être montée entre des rails de guidage (3a, 3b) de section à canal tourné l’une vers l’autre, chaque panneau ayant été pourvu de rouleau de guidage (2) pour chaque rail, caractérisée en ce que le rouleau de guidage (2) a son axe (20) monté dans un trou (19) du bourrelet (6) de l’articulation de charnière et coopère avec un premier rebord (21) du rail de guidage (3a, 3b) distant d’un second rebord, le rebord (21) coopérant avec le rouleau de guidage étant plus court que le second rebord pour permettre une insertion latérale du panneau avec un rouleau de guidage.