(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 444 107 B1**

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: **09.03.94**

(51) Int. Cl.5: **B21D 39/00**, E04C 2/30, E04F 10/08, E06B 9/386

(21) Application number: **89913121.3**

(22) Date of filing: **17.11.89**

(86) International application number:
PCT/DK89/00274

(87) International publication number:
WO 90/05602 (31.05.90 90/12)

(54) **A METHOD OF JOINING STIFF PLATE PROFILE MEMBERS INTO BROAD LAMELLAE OR PANELS AND A LAMELLA OR PANEL ELEMENT OR PRODUCT PRODUCED BY THAT METHOD.**

(30) Priority: **17.11.88 DK 6410/88**

(43) Date of publication of application:
04.09.91 Bulletin 91/36

(45) Publication of the grant of the patent:
09.03.94 Bulletin 94/10

(84) Designated Contracting States:
AT BE CH DE ES FR GB IT LI NL SE

(56) References cited:
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DK-B-13 750 5
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Description

The present invention relates to a method of joining hollow, extruded profiled plate lengths for the formation of broad lamellae or panels, e.g. broad lamella constructions for sun shading systems and to a lamella or plate structure produced by such a method.

For certain applications, e.g. for the said broad lamellae in sun shading systems, it would be desirable to make use of flat and broad, hollow profiles of extruded aluminium, but as well known it is difficult and expensive to produce such extrusions with a width exceeding some 30 cm. Of course it is possible to join such profiles edgewise, e.g. with the use of joining fishes or by welding, but these methods are both expensive and unsuitable, as the ideal is to produce a reasonably smooth and uniform surface on the assembled lamella.

An immediately more attractive solution has already been proposed, viz. to take advantage of the extrusion technique to the effect that the single profile plates are manufactured with tongue-and-groove-systems along the edges, such that the profiles can be joined by a lengthwise pushing together. It has been found, however, that such a joining method, which may well be realistic in connection with profile elements of short lengths, is not realistic when the length of the profiles is of the magnitude 5 m, e.g. 3-7 m. The long profile elements will have to be reasonably stiff, and even though they are produced with all care they will, however, inevitably come up with such minor wrynesses over the long length which may not be visible at all, but in connection with the stiffness of the elements make it almost impossible to use the said joining by a pushing together of the elements. The engagement portions could well be shaped with suitable tolerances, but the result would be that a few elements could be joined in an easy manner for obtaining a fixed joining, while the joinings between many other elements would not be fixed, which is entirely unacceptable; in many other cases an already initiated pushing-together joining would have to be stopped, e.g. upon three fourths of the joining movement having been carried out. Possibly many of the latter joinings could be accomplished anyway by an extra strong pressing together, but for one part this will require a quite costly pressing equipment, and for another part there would be considerable risks of skewnesses occurring in the joined structure.

From US-A-4,211,179 it is known to provide a hollow columnar structure, particularly a sailing vellse mast, by joining two half-oval extrusions edge to edge, each of these edges being profiled with interior, countersunk portions such that these portions at either pair of juxtaposed edges can be held together by means of a complementarily countersunk joining cleat inserted axially along the length of the said edge portions.

According to another known and used technique advantage is still taken of the extrusion technique, viz. here by shaping the profiles with complementary, barbed clamp surface portions, which can be brought into mutual engagement by a crosswise pressing together of the elements, such that the pressing movement shall be effected over a short distance only, but it is well known that also this technique presents many problems as well as a rather high percentage of waste.

It is the object of the invention to provide a joining method, which can be effected in a simple and cheap manner for production of rigid joints with no or very little waste.

According to the invention the object is achieved by the features of claims 1 and 4 respective. Use is made of profile elements, the edge portions of which are shaped with interfacing engagement profile portions, which at each edge portion are provided on flange means projecting inwardly from the opposed other sides of the profile element with a free distance between the opposed engagement profile portions, these portions being shaped such that by a laying together of the profile elements edge to edge they will interlock these elements in the transverse direction; the engagement profile portions are provided on flange means, which have a widening inside the profile element, such that in their laid together condition they will show a bilaterally widened head portion, these head portions thus being located opposite to each other with a free space therebetween; for the joining of the profile elements is used an extra profile member shaped as a narrow plate strip, the opposed edges of which are provided with part-cylindrical flange portions of such cross sectional shapes that these flange portions, by an insertion of the extra profile member along the laid together engagement profile portions, can engage over the widened head portions so as to hold these together. Thus it is sufficient to lay together the profile elements edge to edge and then push in the extra joining profile member for holding together the said head portions consisting of the respective halves of the said inwardly projecting flange means, such that the profile elements are hereby interiorly interlocked.

It is important that the extra joining profile member is not a thick block string, but a plate strip with part-cylindrical widenings along the outer edges, because this will be decisive for this profile member being to some degree flexible, such that when it is inserted it may adapt itself to a slightly curved run of the laid together edge portions of the plate profile elements, should such a run occur.

The outwardly open part-cylindrical flange portions of the joining profile member may well be designed with a certain oversize relative to the flange head portions which they shall surround. For a joint over a short length this will result in an undesired loose joint, but when the joint is pronounced elongated and shows even the slightest deviations from an accurately linear shape, then the said part-cylindrical flange portions will at least at places hold the edges of plate profile elements tightly joined, whereby these elements as respective wholes will engage each other in an entirely stable manner.

By practical experiments with commercially produced profile elements of aluminium it has been found that it is hereby possible to provide a completely firm edge joining between profile elements having a length of 6 meters by a quite untroubled, manual insertion of the joining profile members.

The invention, which is defined in the appended claims, is described in more detail in the following with reference to the drawing, in which:

Fig. 1 is a perspective view of a few lamellae in a sun shading system,

Fig. 2 is a sectional view of some adjoining profile elements for forming such lamellae,

Fig. 3 is a perspective view thereof,

Fig. 4 is a perspective view of a lamella when being assembled,

Fig. 5 is a sectional view of a panel element according to the invention; and

Figs. 6 and 7 are perspective views of structures provided in accordance with the invention.

In Fig. 1 is shown the upper ends of a few laminae 2 which are mounted in a rotatable manner between an upper supporting beam 4 and a corresponding lower beam or box, in which means may be provided for concurrent turning of all the laminae for changing the angular positions thereof, as it can be desirable in a sun shading system. What is here concerned is heavy, large laminae with a width of e.g. 40-80 cm and with a length of some 2-8 meters. As these elements should be able to resist quite heavy wind forces and even other influences they should be designed so as to be very stiff, and moreover they should be as light as possible. Also, their outer surfaces should be smooth. It could be close to hand to think of the elements as extruded aluminium profiles, but when their width is more than some 30 cm this is not an attractive possibility, while it is almost a practical impossibility if the width is 60 cm or more.

As mentioned, therefore, it may be desirable to assemble the lamellae by edge joining of extruded profile elements, and in Fig. 2 is shown an example of such profiles, which are ready to be joined edge to edge. Outermost to the left is shown a V-profile 6, which at each of its opposed free edges of the side walls designated 8 is shaped with flanges 10 and 12 projecting inwardly towards each other. Along its free edge the flange 10 is shaped with a cross sectionally half-circular portion 14 having a groove 16 opening towards the right and an opposed outer side 18 of a part-circular configuration concentric with the groove 16. At its rear side the other flange 12 has a quite similar part-circular widening, here designated 18', while at its front side it has forwardly projecting widening 20 with a half-cylindrical cross section corresponding to the shape of the groove 16. At some distance inside its open end the V-profile is provided with a cross wall 22 having a projecting middle rib 24 shaped with a channel portion 26. Due to the cross wall 22 the profile element 6 will be a stiff hollow profile element.

Next to the profile 6 is placed another profile 28, which can hereafter be described briefly. This profile is of a trapezoidal shape, with the outer walls 8 and with cross walls 22. At its left hand end it is shaped exactly as a counterpart to the edge area of the profile 6, i.e. with the flange portion 12,18',20 located next to the groove flange 14,16 of the profile 6 and with its own groove flange 14,16 located next to the flange 12,20 of the profile 6. At its opposite, right hand end the profile 28 is shaped in a manner corresponding to the profile 6, though in the example shown with a somewhat smaller distance between the opposed flange portions 14,16 and 18',20.

To the right of the profile 28 is placed a further profile 30, which is shaped fully similarly to the profile, only with a smaller width at its open edge, corresponding to the reduced edge width of the right hand end of the profile 28. The profile 30 is oriented such that the profile details 10-20 are located in a manner quite similar to their location at the left hand edge of the profile 28.

The profiles 28 and 30 are shown entirely laid together, with the rib portions 20 received in the grooves 16 by a purely transversely oriented pushing together of the profiles. Thereby the profiles will engage each other lockingly in the transverse direction perpendicular to the pushing together direction. The radius of the ribs 20 is slightly smaller than the radius of the groove depressions 16, such that the relevant, respective engagements can be established along the entire length of the profiles, also when the lengthwise direction of the edge portions is not linear in any absolute sense. It will be noted that the laid together profile details 10-20 will appear as inwardly protruding ribs 32 having circular-cylindrical widenings or heads 34 formed by the surface portions 18 and 18' on the flanges to be joined.

As illustrated in Fig. 3 it is possible to thereafter lock together the portions forming the head

portions 34, viz. by inserting a locking profile member 36 over and along these portions 34. The profile member 36 comprises an intermediate plate strip portion 38, the opposed longitudinal edges of which are provided with outwardly open, part-cylindrical flanges 40, which are adapted to surround the head portions 34, such that by the insertion of the locking profile 36 the laid together, head forming parts will be totally interlocked by their local engagement with the closely surrounding profile portions 40.

However, it is here very important that the said local locking engagement should not be 'total' in each single cross section of the structure, as the inner diameter of the part cylindrical recess 42 in the flange portions 40 is slightly larger than the outer diameter of the head portions 34, e.g. with the ratio 4.5:4.0 mm. Purely locally, i.e. in each single cross section, this will be highly unacceptable, since even the slightest play in the joint will be inadmissible, but as already mentioned the circumstances are different when very long elements are to be joined. These will inevitably show small inaccuracies in their length directions, and by the insertion of the joining member 36 the said overdimensioning will account for the advantageous effect that the joining member 36 is very easy to insert, preferably purely manually, and yet it will serve to establish a 'total' holding engagement at just some places along the entire length of the elements, this being sufficient to produce an entirely stiff joining of the respective neighbouring profile elements 6, 28 and 30.

In Fig. 4 it is illustrated how the joining profile members 36 are inserted along the entire length of the edgewise joined plate profile elements 6, 28 and 30, and it should be noticed that the lengths in question may be e.g. 2-8 meters, i.e. relatively high lengths. In Fig. 4 it is also shown that the ends of the joined profile elements may be covered by an end plate 44, in which holes 46 are provided for receiving bolts to be screwed into the ends of the hollow flange portions 24,26 on the cross walls 22 of the profiled elements, and if the use of pivot pins is desired such pins may be connected with these end plates.

The invention is not limited to the production of sun shading lamellae, as it may be applied generally wherever it is desired to join relatively narrow profile elements into broader lamella or panel structures. It will be appreciated that based on the profile elements shown in Fig. 2 it is possible to build up other lamella configurations, e.g. relatively narrow profiles by joining two elements 30 directly edge to edge or with use of two intermediate profiles 28, which are interconnected at their broad ends and are furthermore joined with end profiles 30 at both ends or edges.

In fig. 5 it is indicated that in a corresponding manner it is possible to join profile elements 50 having plan parallel outer sides into a structure having an unrestricted dimension in the cross direction, e.g. for the construction of very broad panel elements. It is also shown that the joining profiles 36 may be modified in various ways, e.g. in being replaced by singular embracing profiles 52 for the respective head portions 34, the cross connection 38 between these profile portions being less important when fixed cross walls 22 are already present adjacent the joining areas, as these walls will hold together the edge portions of the profile elements with the desired spacing.

The joining profile portions 40 should not necessarily extend over more than 180°, as their primary function is to merely hold the head forming portions 34 together, against each other in the width direction of the assembled structure, while the holding together in the cross direction will be effected by the cross wall portions 22 of the profile elements. An example of this is shown in Fig. 5, where a connector profile 54 having U-shaped edge flanges 56 cooperates with inwardly protruding plate flanges 58 next to the edges of the profile elements, which are otherwise joined by an ordinary socket joint. At the right hand side of this joint another joint is shown, where the flanges 58' are mutually spaced, but held together by means of a correspondingly broader joining head 56' on the joining profile 54'; such a broad joining head, however, is not particularly advantageous, as it causes an increased stiffness of the joining profile, whereby the latter can less easily adapt itself to the slightly curved shape of the profile elements, whereby it may be more difficult to insert.

At 60 in Fig. 5 it is shown that a joining profile may extend in the plane of the profile elements and serve to hold together such portions 62, which are projections on the edge walls 64 of the profile elements, whereby the outer edge areas will be held together at interengaging flange portions 66. At the outer right hand side of Fig. 5 another modification is shown, where the profile elements at one side do not have any edge recess, but are terminated by an end wall 68, along the edges of which there are provided engagement ribs 70 for guidingly receiving the side edges of the neighbouring element. Between the opposed edge ribs 70 the edge wall 68 is at one or more places provided with a projecting T-profiled portion 72, which is held together with a corresponding profile portion 74 on the neighbouring element by means of joining profiles 76.

It should be mentioned that the use of the joining profiles, when these are inserted with considerable force for straightening the said slight wryness of the elements, will act strongly reinforcing

on the elements, whereby it will often be possible to make use of a thinner base material.

The elements can be surface treated before the joining, whereby no aftertreatment will be needed.

Claims

1. A method of edgewise joining hollow, extruded plate profiles for the formation of long and wide lamella or panel elements, e.g. for use in sun shading systems, by which method use is made of plate profiles, which along their opposed edges are provided with mutually engageable edge profile portions, characterized in that use is made of plate profiles, (6, 8) the edge profile portions of which are shaped (16, 20) so as to engage each other lockingly in the cross direction when the plate profiles are brought together edge to edge, the edge portions also being shaped with crosswise arranged, inwardly protruding edge flange portions (10, 12) having a relatively short dimension in the cross direction, and that for the fixed joining of the plate profiles use is made of an additional joining profile member (36), which is optionally divided into two parts and is provided, mono- or bilaterally, with a U- or C-profiled edge string portion (40), which is dimensioned such that this or these edge strings may surround or receive the said edge flange portions (10, 12) so as to hold them together for stabilizing the edge to edge engagement of the plate profile elements, said joining profile member being inserted in its axial direction lengthwise of the plate profiles as laid together edge to edge, in holding engagement with the respective edge flange portions.

2. A method according to claim 1, characterized in that the joining profile used is a profile member (36), which is bilaterally provided with the said U- or C-profiled edge strings (40) and has a narrow and flexible, plate shaped connector portion (38) between these edge strings.

3. A method according to claim 1, whereby the joining profile (36) is inserted along practically the entire length of the plate profile elements, and whereby use is made of a joining profile, the U- or C-profiled edge strings (40, 42) of which are designed with pronounced coarse tolerances with respect to their fit with the edge flange portions of the plate profile elements.

4. A lamella or plate structure provided by the joining method according to claim 1, comprising a number of profiled plate elements (6, 8), which along their opposed edges are provided with mutually engageable edge profile portions and are joined edge to edge, characterised in that the edge profile portions are shaped with respective groove and rib means (16, 20) so as to engage each other lockingly in the cross direction of the plate elements when these are held together edge to edge, the edge portions also being provided with crosswise arranged, inwardly protruding edge flange portions (10, 12) having a relatively short dimension in the cross direction, these edge flange portions of adjacent plate elements being held together by means of a separate joining profile member (36) which may optionally be divided into two parts and is provided, mono- or bilaterally, with a U- or C-profiled edge string portion (40) dimensioned such that this or these edge strings by insertion of the joining profile member in the longitudinal direction of the edge area surround or receive the edge flange portions so as to hold them together for stabilizing the edge to edge engagement of the plate profile elements.

5. A structure according to claim 4, in which the proximate sides of the plate edge flanges (10,12) are provided with respective groove and rib portions (16,20), while at their distal sides they are profiled with an approximately half circular configuration, such that the opposed, laid-together plate edge flanges form an approximately circular head portion (34), the joining beam (36) having C-profiled edge flanges accommodating these head portions.

6. A structure according to claim 4, shaped with smooth outer sides extending flush with each other along the joining areas.

7. A structure according to claim 4, made in aluminium, and in which the U- or C-profiled edge grooves (42) of the joining beam (36) are dimensioned somewhat larger than the cross sectional area of the cooperating head portion (34) of the joined plate edge flanges (10,12;58)

8. A structure according to claim 4, in which the profiled plate elements are joined in a joint pattern (Figs. 6,7)

Patentansprüche

1. Ein Verfahren zur Verbindung der Ränder hohler, extrudierter Plattenprofile zur Bildung langer und breiter Lamellen- oder Tafelelemente, zum Beispiel zwecks Benutzung bei Sonnenschutzsystemen, unter Verwendung von Plattenprofilen, die entlang ihrer gegenüberliegenden Ränder mit miteinander in Eingriff zu bringenden Randprofilabschnitten versehen sind, dadurch gekennzeichnet, daß Plattenprofile (6,8) verwendet werden, deren Randprofilabschnitte eine solche Ausbildung (16,20) aufweisen, daß sie miteinander unter Einrasten in Querrichtung in Eingriff treten, wenn die Plattenprofile Rand gegen Rand zusammengebracht werden, wobei die Randabschnitte weiter mit quer angeordneten, nach innen vorspringenden Randflanschabschnitten (10,12) ausgebildet sind, die in Querrichtung relativ kurz sind, und daß zum festen Verbinden der Plattenprofile ein zusätzliches Verbindungsprofilteil (36) verwendet wird, das fakultativ in zwei Teile geteilt ist und ein- oder zweiseitig mit einem U- oder C-profilförmigen RandWangenabschnitt (40) versehen ist, der so dimensioniert ist, daß dieser oder diese Randwangen besagte Randflanschabschnitte (10,12) umgeben oder aufnehmen können, um sie zum Stabilisieren der Rand-an-Rand-Verbindung der Plattenprofilelemente in haltendem Eingriff mit den jeweiligen Randflanschabschnitten zusammenzuhalten, wobei das Verbindungsprofilteil in seiner Axialrichtung längs zu den Rand an Rand zusammengelegten Plattenprofilen eingeführt wird.

2. Ein Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß das verwendete Verbindungsprofil ein Profilteil (36) ist, das zweiseitig mit besagten U- oder C-profilförmigen Randwangen (40) versehen ist und einen schmalen und flexiblen, plattenförmigen Verbindungsabschnitt (38) zwischen diesen Randwangen aufweist.

3. Ein Verfahren nach Anspruch 1, wobei das Verbindungsprofil (36) über praktisch die gesamte Länge der Plattenprofilelemente eingefügt und wobei ein Verbindungsprofil verwendet wird, dessen U- oder C-profilförmige Randanschlüsse (40,42) mit ausgeprägten Grobpassungen in Bezug auf ihren Sitz gegenüber den Randflanschabschnitten der Plattenprofilelemente ausgebildet sind.

4. Eine Lamellen- oder Plattenanordnung, geschaffen mittels des Verbindungsverfahrens nach Anspruch 1, umfassend eine Anzahl Profil-Plattenelemente (6,8), die entlang ihrer gegenüberliegenden Ränder mit miteinander in Eingriff zu bringenden Randprofilabschnitten versehen sind und Rand gegen Rand verbunden werden, dadurch gekennzeichnet, daß die Randprofilabschnitte jeweils mit Rillen- und Rippenmitteln (16,20) ausgebildet sind, um miteinander in Querrichtung der Plattenelemente einrastend in Eingriff zu treten, wenn diese Rand gegen Rand zusammengehalten werden, wobei die Randabschnitte weiter mit quer angeordneten, nach innen vorspringenden Randflanschabschnitten (10,12) versehen sind, die in Querrichtung relativ kurz dimensioniert sind, und wobei diese Randflanschabschnitte benachbarter Plattenelemente mittels eines separaten Verbindungsprofilteils (36) zusammengehalten werden, das fakultativ in zwei Teile geteilt sein kann und ein- oder zweiseitig mit einem U- oder C-profilförmige Randwangenabschnitt (40) versehen ist, der so dimensioniert ist, daß diese Randwange/n durch Einfügen des Verbindungsprofilteils in Längsrichtung des Randbereiches die Randflanschabschnitte umgibt/umgeben oder aufnimmt/aufnehmen, um sie zum Stabilisieren des Rand-gegen-Rand-Eingriffs der Plattenprofilelemente zusammenzuhalten.

5. Eine Anordnung nach Anspruch 4, bei der benachbarte Seiten der Plattenrandflansche (10,12) mit jeweiligen Rillen- und Rippenabschnitten (16,20) versehen sind, während sie an ihren distalen Seiten mit einer annähernd halbkreisförmigen Ausbildung profiliert sind, so daß die gegenüberliegenden, zusammengelegten Plattenrandflansche einen annähernd kreisförmigen Kopfabschnitt (34) bilden, wobei der verbindende Träger (36) C-profilförmige Randflansche aufweist, die zu diesen Kopfabschnitten passend sind.

6. Eine Anordnung nach Anspruch 4, die mit glatten Außenseiten ausgebildet ist, die sich fluchtend zueinander entlang der Verbindungsbereiche erstrecken.

7. Eine Anordnung nach Anspruch 4, die aus Aluminium hergestellt ist und bei der die U- oder C-profilartigen Randrillen (42) des Verbindungsträgers (36) etwas größer als der Querschnittsbereich des zugeordneten Kopfabschnitts (34) der verbundenen Plattenrandflansche (10,12; 58) dimensioniert sind.

8. Eine Anordnung nach Anspruch 4, bei der die profilierten Plattenelemente in einem Verbin-

dungsmuster (Fig. 6,7) verbunden sind.

Revendications

1. Procédé pour assembler latéralement des profilés plats extrudés, creux, pour la formation de lamelles ou d'éléments de panneau longs et larges, par exemple pour un usage dans des systèmes de protection solaire, procédé dans lequel on utilise des profilés plats lesquels, le long de leurs bords opposés, sont munis de parties de bord engageables mutuellement,
caractérisé en ce qu'on utilise des profilés plats (6,8) dont les parties de bord (16,20) sont conformées pour s'engager l'une dans l'autre, de façon verrouillée, dans la direction transversale quand les profilés plats sont réunis bord à bord, les parties de bord étant également conformées avec des parties (10,12) à rebord faisant saillie intérieurement, agencées transversalement, ayant une dimension relativement courte dans la direction transversale, et en ce que, pour l'assemblage fixe des profilés plats, on utilise un organe profilé d'assemblage additionnel (36) qui est éventuellement divisé en deux parties et est muni, mono ou bilatéralement, d'une portion (40) à longeron profilé en U ou en C, qui est dimensionnée de telle façon que ce ou ces longerons puissent entourer ou recevoir lesdites parties à rebord (10,12) afin de les maintenir ensemble pour stabiliser l'engagement bord à bord des éléments profilés plats, ledit organe profilé d'assemblage étant inséré dans sa direction axiale, longitudinalement aux profilés plats assemblés bord à bord, en engagement de maintien avec les parties à rebord respectives.

2. Procédé selon la revendication 1,
caractérisé en ce que le profilé d'assemblage utilisé est un organe profilé (36) qui est muni bilatéralement desdits longerons (40) profilés en U ou en C et présente une partie de liaison (38) en forme de plaque, étroite et souple, entre ces longerons.

3. Procédé selon la revendication 1,
dans lequel le profilé d'assemblage (36) est inséré pratiquement le long de la longueur totale des éléments profilés plats, et dans lequel on utilise un profilé d'assemblage dont les longerons (40,42) profilés en U ou en C sont conçus avec des tolérances approximatives marquées par rapport à leur montage avec les parties à rebord des éléments profilés plats.

4. Structure à lamelles ou plaques obtenue par le procédé d'assemblage selon la revendication 1, comprenant un nombre d'éléments plats profilés (6,8), lesquels, le long de leurs bords opposés, sont munis de parties de bord engageables mutuellement et sont assemblés bord à bord,
caractérisée en ce que les parties de bord sont conformées avec des moyens à rainure et nervure respectives (16,20), pour s engager l'une dans l'autre, de façon verrouillée, dans la direction transversale des éléments plats quand ils sont maintenus ensemble bord à bord, les parties de bord étant également munies de parties à rebord (10,12) faisant saillie intérieurement, agencées transversalement, ayant une dimension relativement courte dans la direction transversale, ces parties à rebord d'éléments plats adjacents étant maintenues ensemble au moyen d'un organe profilé d'assemblage séparé (36), qui peut éventuellement être divisé en deux parties et est muni, mono ou bilatéralement, d'une partie de longeron profilée en U ou en C (40), dimensionnée de telle façon que ce ou ces longerons, par insertion de l'organe profilé d'assemblage dans la direction longitudinale de la zone de bord, entourent ou reçoivent les parties à rebord, afin de les maintenir ensemble pour stabiliser l'engagement bord à bord des éléments profilés plats.

5. Structure selon la revendication 4, dans laquelle les côtés proches des rebords (10,12) sont munis de parties de rainure et nervure respectives (16,20), tandis qu'à leurs côtés éloignés, ils sont profilés en une configuration approximativement semi-circulaire, telle que les rebords opposés, assemblés, forment une partie de tête approximativement circulaire (34), la poutre d'assemblage (36) ayant des rebords profilés en C s'agençant dans ces parties de tête.

6. Structure selon la revendication 4, formée avec des côtés externes lisses s'étendant en continuité l'un de l'autre le long des zones de jonction.

7. Structure selon la revendication 4, réalisée en aluminium, et dans laquelle les rainures profilées en U et en C (42) de la poutre d'assemblage (36) sont dimensionnées quelque peu plus grandes que la section transversale de la partie de tête coopérante (34) des rebords assemblés (10,12 ; 58).

8. Structure selon la revendication 4, dans laquelle les éléments plats profilés sont assemblés selon un modèle d'assemblage (figures 6,7).

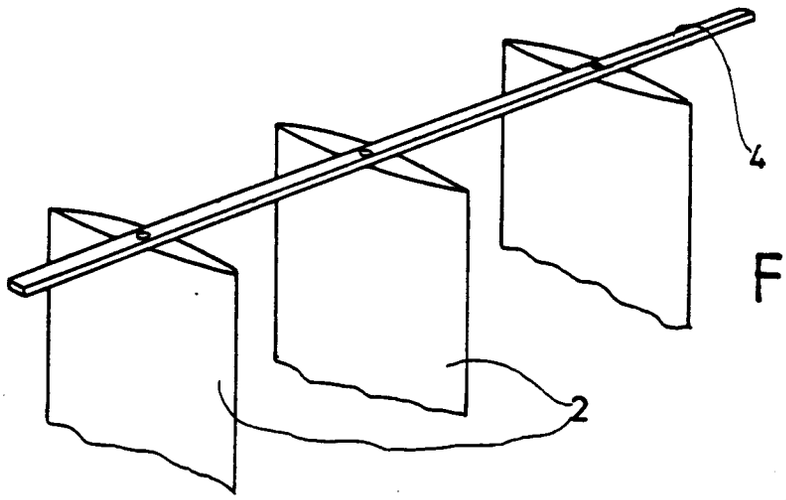


FIG. 1

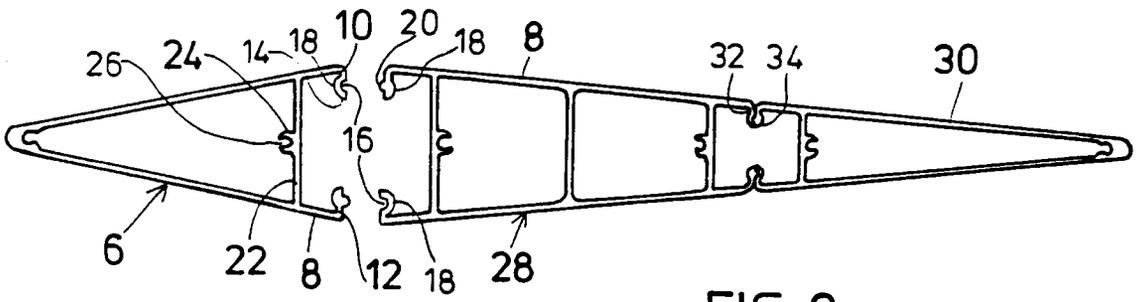


FIG. 2

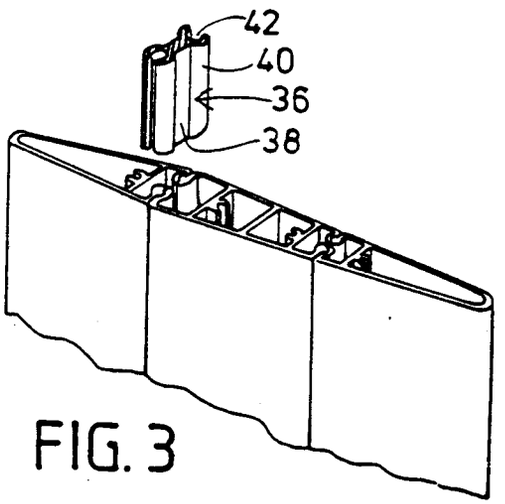


FIG. 3

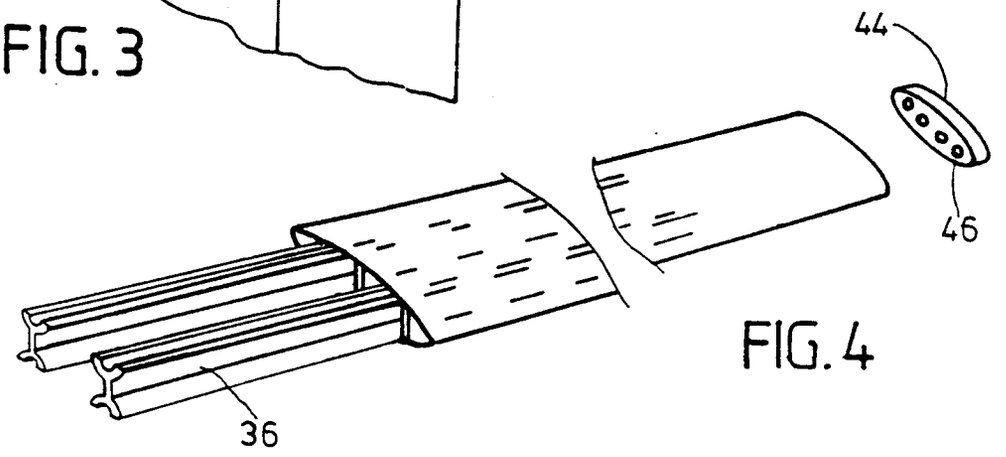
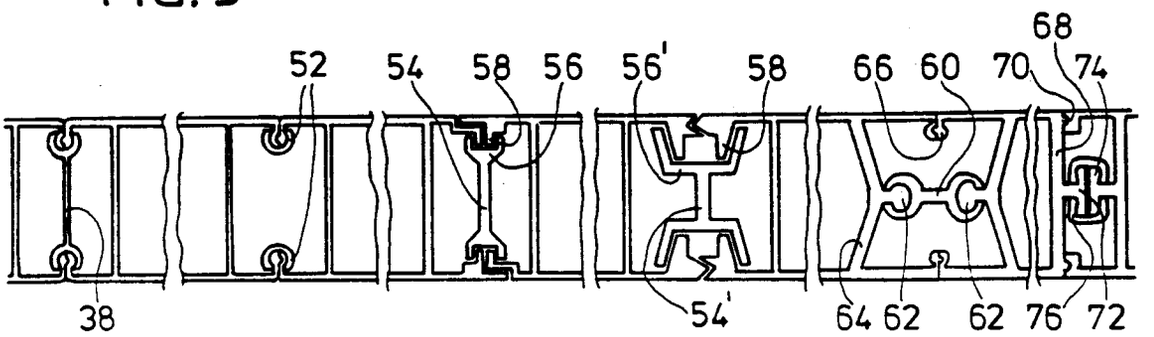


FIG. 4

FIG. 5



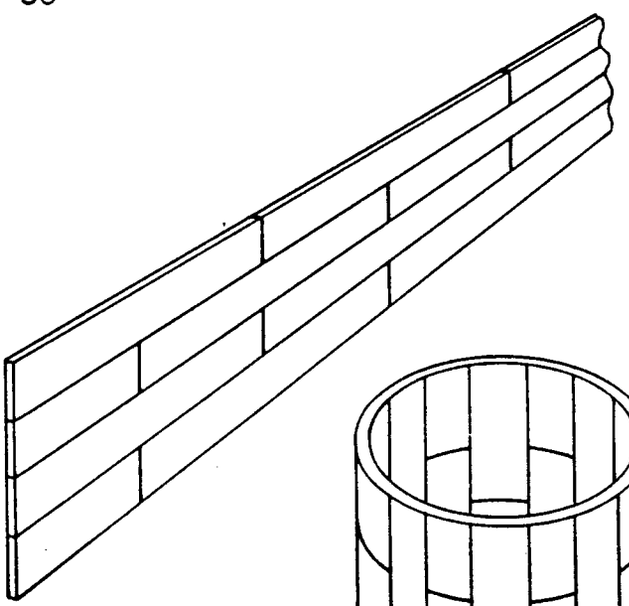


FIG. 6

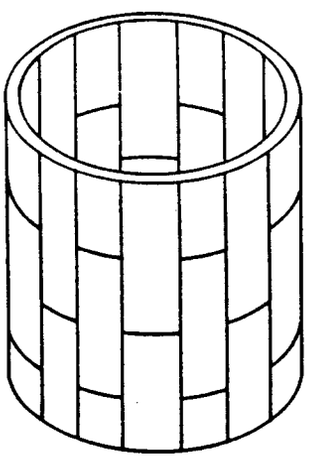


FIG. 7