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(54) **A FOLDING WEATHER PROTECTION MODULE AND A METHOD FOR ITS SETTING UP**
KLAPPBARES WITTERUNGSSCHUTZMODUL UND AUFBAUVERFAHREN DAFÜR
MODULE DE PROTECTION CONTRE LE TEMPS PLIABLE ET PROCEDE DE MONTAGE ASSOCIE

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EP 1 745 185 B9

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Description

TECHNICAL FIELD

[0001] The present invention relates to a folding weather protection module as claimed in the preamble to the following claim 1.

[0002] The present invention also relates to a method for erecting a folding weather protection module as claimed in the preamble to the following claim 4.

BACKGROUND ART

[0003] There are various weather protection systems available on the market with protective cover and frame, where the frame normally has a relatively simple design with frame arches that are kept apart by means of horizontal stays at the top along the base of the roof and at the bottom on the ground, possibly supplemented by a number of diagonal braces. These weather protection systems are relatively time-consuming to dismantle as the stays and braces are handled and stored separately from the other parts of the frame, while the cover is handled completely separately from the frame and is not put on until the frame has been erected. Examples of such systems can be formed in US 5263507A and AT 656301.

DISCLOSURE OF INVENTION

[0004] The object of the present invention is to produce a folding weather protection module that is possible to erect and fold up quickly and that also fulfils high demands regarding stability, even in adverse weather conditions.

[0005] The said object is achieved by means of a folding weather protection module according to the present invention, with characteristics that are apparent from the following claim 1.

[0006] The said object is also achieved by means of a method for erecting a weather protection module, which method is characterized in accordance with claim 4.

BRIEF DESCRIPTION OF DRAWINGS

[0007] The invention will be described in greater detail in the following in the form of an embodiment, with reference to the attached drawings, in which Figure 1 shows a perspective view of a folding weather protection module according to the invention, while Figure 2 shows a detailed view of a folding joint comprised in the weather protection module according to the invention.

MODE(S) FOR CARRYING OUT THE INVENTION

[0008] The weather protection module according to the invention consists of an integrated unit with a frame part 1 and a cover part 2 that is integral with the frame part in all states, that is both in the erected state and in the

folded state. The frame part 1 consists of a number of frame arches, in the example shown three frame arches 3, 4, 5, that are parallel to each other and a certain distance apart in the erected state. Each frame arch 3, 4, 5 consists of a roof section 6 and two side sections 8. The roof section 6 is angled in order to form a ridge 9, while the side sections 7, 8 can be folded relative to the roof section at the respective corners that form the base of the roof by means of folding joints 10, 11 that are arranged at the corners, which enable the side sections of the frame to be folded in. The cover part is intended to form the roof and the side walls as a continuous cover down to the ground or floor level and is attached to the frame arches by channels that are sewn or glued onto the inside of the cover, or alternatively by a plurality of ties being arranged so that there is an attachment between the cover and the tube sections that make up the frame arches.

[0009] According to the invention, the frame part 1 is provided with a number of braces, namely two diagonal braces 12, 13 that are arranged in each space between two adjacent frame arches. More specifically, one diagonal brace is attached, in such a way that it can fold, to the outermost frame arch 3 at the bottom of its side section, by means of a folding joint 14 arranged at one end of the diagonal brace, while at its opposite end 16, the diagonal brace is attached to the next frame arch 4 at the top of its side section and in such a way that it can fold relative to the middle frame arch by means of a folding joint 17. The other diagonal brace is attached at the bottom of the middle frame arch by means of a lower folding joint 18 at its lower end 19, while at its upper end 20, the brace is attached at the top of the outer frame arch by means of a folding joint 21.

[0010] The two diagonal braces 12, 13 are not attached to each other at their point of intersection, but pass each other as a result of the points of attachment of their ends being displaced sideways to a certain extent. In addition, the diagonal braces 12, 13 are variable in length as they are telescopic and consist of two tube sections 22, 23, one of which can be inserted in the other, and can be locked relative to each other by means of a locking device 24 that can be released, which, for example, consists of a folding lever that creates a clamp effect between the tube sections by means of an eccentric function. By means of the locking device 24, the diagonal braces are arranged to be able to be locked, primarily when fully extended, but they can also be locked when fully retracted, in order, for example, to avoid unintentional unfolding. In a corresponding way, pairs of diagonal braces are arranged in each space 25, 26, 27, 28 between two adjacent frame arches and are arranged in the same way as described above with folding joints at their ends and a locking function between the telescopic sections. In the weather protection module in question with three frame arches, four pairs of diagonal braces are thus arranged, two pairs on one side wall and two pairs on the other side wall.

[0011] According to the invention, the frame part is pro-

vided with a number of folding stays that extend in the spaces 25-28 between the frame arches, more specifically with two folding stays 29, 30 in each space, a lower folding stay located below the lower folding joints 14, 18 of the diagonal braces and an upper folding stay 30 located above the upper folding joints 17, 21 of the diagonal braces. The folding stays have a folding joint 35, 36, 37, 38 at each end 31, 32, 33, 34, for attachment, in such a way that they can fold, to the side section 7, 8 of the first or second frame arch 3, 4. The folding stays have, in addition, an intermediate folding joint 39, 40 that is located at the midpoint of the stay. This middle folding joint is so arranged that it can keep the stays in a stable unfolded position as it is designed to maintain a stable end position for the folding movement. This is, for example, carried out by each middle folding joint 39, 40 being able to be folded past the centre, to a so-called over-centre position, which remains stable as the tension of the cover creates an axial pressure from the two folding joints 35, 36, 37, 38 towards the middle folding joint 39, 40 in the associated stay 29, 30 respectively. In the example shown, the two stay sections 41, 42 can be folded slightly more than 180° relative to each other around their middle folding joints 39, 40. It is possible that an extra locking device may be required to lock the folding stays in the unfolded state.

[0012] Similarly, stays 43, 44 are arranged between the roof sections of the frame arches, which, for example, can be able to be folded at one end 45, 46 and thus are attached by means of their folding joint 47, 48 to the respective ridge section, and are able to be released at the opposite end so that the respective stay is able to be folded in to make contact parallel to the roof section 6 of the associated frame arch. It is also possible for the two ridge stays 43, 44 to consist of folding stays of the same type as the stays 29, 30 in the side sections.

[0013] It will be described in the following, in the form of an example, how the weather protection module according to the invention can be erected. Each module is stored in a space-saving way, with the frame part and the cover part as integral parts. The cover part is designed to be such a size that is required for a weather protection module in the erected state, with the addition of overlapping parts 49, 50, 51 that extend outside the two outer frame arches to form a weather-proof overlap to the next section. In the initial position in the folded state, the frame arches lie relatively close to each other and with the side sections 7, 8 folded in around the associated folding joints 10, 11 towards the roof section 6. For this purpose, the side sections are advantageously of such a length that they are the same size as the length of the roof section 6, which gives space to enable the two side sections 7, 8 to be laid overlapping in relation to each other. The telescopic function of the diagonal braces enables these to be fully retracted and to lie essentially parallel to each other and to the associated side sections of the frame arches. In a corresponding way, the folding stays 29, 30 are folded in an inwards direction around

their middle folding joints 39, 40 and their folding joints at the ends 35-38 so that they are in contact with the side sections of the adjacent frame arches. In a corresponding way, the ridge stays 43, 44 are removed from their erected position, for example by folding them to a position parallel to the roof section 6 of the frame arches.

[0014] A complete weather protection system of the folding shelter type is stored and transported in a number of packages, depending upon the size of the finished shelter. For the addition of gable ends, that is the modules that are to be outermost, there are matching gable end covers that are attached to the outer frame arches, or alternatively there can be complete gable end modules. In certain applications, it can be appropriate to have one or both gable ends open or able to be opened by the gable end cover having a door attached that can be closed or alternatively by the gable end being able to be removed completely. The erection is commenced by unfolding the legs or side sections 7, 8 of the three frame arches 3, 4, 5 by pivoting them outwards around the two folding joints 10, 11 in each frame arch and locking the joint in the unfolded state by means of a locking device, which will be described below in the example shown in greater detail in Figure 2. The side sections 7, 8 will then be parallel to each other, whereupon the arches are raised up from the horizontal position into a vertical position and are moved apart so that the cover is at least partially tensioned. Thereafter, the folding stays 29, 30 are opened to their maximum unfolded position, that is their stable end position, whereupon the cover is so dimensioned and attached that it is correctly tensioned. All the time that the frame arches are being moved apart, the diagonal braces are kept unlocked so that they can be gradually lengthened from their minimum length in the folded state until the folding stays are completely extended. Thereafter the diagonal braces are fixed by setting the locking device 24 to the locking position. Finally, the ridge stays 43, 44 are placed in their erected position according to Figure 1, so that the frame arches are also held a predetermined distance apart at the ridge.

[0015] Once the first weather protection module has been erected, the erection of additional modules continues in the same way, and these modules are lifted into place in an erected state and then they are joined together with previously erected modules by joining together both the covers and the frame arches by means of suitable connecting devices. At the bottom, they can be anchored by means of ground spikes that can be inserted through, for example, a flange arranged on any of the lower ends of the frame arches or alternatively on any of the folding stays. The cover can be provided with a skirt at the bottom (not shown) that makes contact with the ground for sealing against the wind, for example by means of sandbags or by the skirt being designed with sealed channels that can be filled with water to form a secure anchorage and make a tight connection to the ground.

[0016] Figure 2 shows a partial large scale view of an

example of an embodiment of one of the upper folding joints 10, 11 in the frame arches. The folding joint itself consists essentially of two parallel plates 52 that are joined together either by spacing bolts 53, 54 that also act as pivots, or alternatively the plates consist of a U-shaped bent plate with connecting plate 55. The plates are arranged to take between them one end 56 of a frame tube that forms the roof section 6 of each frame arch and one end 57 of the frame tube that forms the side section 8 of the frame arch. All the frame tubes are advantageously designed as square profiles with a degree of rounding of the corners and are constructed suitably of a durable resilient plastic material with relatively high rigidity and high durability plus low weight. It is sufficient for one tube to be able to be folded in relation to the plates 52, for example the side section 8 around the pivot 54. As mentioned above, the folding joint 11 can be locked when the weather protection module is in the erected state, that is the state according to Figure 1 and 2 which, according to the example shown, is carried out by means of a separate stay 58, the bottom of which is attached to the frame tube of the wall section 8 by means of a bracket 59 with a flange 60, so that the stay is inserted between two flange sections or at the side of the flange sections and is fixed by means of a bolt 61. In a corresponding way, the stay 58 is attached to both plates 52 of the folding joint 11 by means of a bolt 62, with the upper end of the stay suitably inserted between the two plates 52. By this means, one fixing point can be released when the weather protection module is to be folded up, while in the erected state, due to the location of the fixing points at the side of the pivot point 54, the stresses on the fixing points 61, 62 are relatively low in comparison to when the locking is carried out in the vicinity of the pivot point 54.

[0017] The invention is not limited to the embodiment that is described above and shown in the drawings, but can be varied within the framework of the following patent claims. For example, it is possible for each module to consist of only two frame arches with intermediate stays, or alternatively of four or more frame arches. It is also possible for there to be diagonal braces only between two of the frame arches in each module, with folding stays arranged between all the frame arches. It is also possible to have folding stays that are twice as long and that extend past the middle frame arch and are attached to the two outer frame arches and have a folding joint located in the middle of the middle frame arch so that the stay lies to the side of the middle frame arch.

Claims

1. A folding weather protection module, consisting of a frame part (1) and a cover part (2), in which the frame part comprises a number of frame arches (3, 4, 5) with side sections (7, 8) and roof sections (6) and with braces and stays (12, 13, 29, 30) extending between the frame arches, which frame arches are lo-

cated a distance apart in the weather-protecting state, wherein the stays are folding stays, and each of the folding stays is attached at its ends to two of the frame arches in such a way that it can fold and has a folding joint (39, 40) **characterized in that** the braces are telescopic diagonal braces (12, 13), **in that** each diagonal brace is attached at its ends to two adjacent frame arches in such a way that it can fold and is telescopic so that its length can be changed, and each of the folding stays has a stable end position in the unfolded state, whereby in the weather protection module's folded state, the diagonal braces and the folding stays enable the frame arches to be parallel to each other and close together and in the unfolded state they hold the frame arches a predetermined distance apart with the diagonal braces locked in the extended position and the folding stays in their stable end position.

2. The folding weather protection module as claimed in claim 1, **characterized in that** the diagonal braces (12, 13) are located between at least two adjacent frame arches (3, 4) and are attached in such a way that they are independent of each other and in such a way that they can fold, with the lower ends of each diagonal brace being attached to the bottom of the first and the second frame arch (3, 4) and with the upper ends being attached to the second and the first frame arch (4, 3), and **in that** one of the folding stays (29) is attached below the diagonal braces, in such a way that it can fold, and a second folding stay (30) is attached above the diagonal braces, in such a way that it can fold, between at least two of the frame arches and also between the other frame arches.
3. The folding weather protection module, as claimed in claim 1 or 2 **characterized in that** the middle folding joint (39, 40) of the folding stays is located at the midpoint of the stay and has a so-called over-centre position, where the stay is locked in a stable position.
4. A method for erecting a folding weather protection module according to any of claims 1-3, wherein the frame arches are erected with the cover part (2) attached to them, by the frame arches being moved apart, at the same time extending the telescopic diagonal braces (12, 13) that are attached between the frame arches in such a way that they can fold, and unfolding the folding stays (29, 30) to a stable end position in which the cover is tensioned, and also locking the diagonal braces in their extended end position.

Patentansprüche

1. Klappwetterschutzmodul, das aus einem Rahmen-

teil (1) und einem Abdeckteil (2) besteht, wobei das Rahmenteil eine Anzahl von Rahmenbogen (3, 4, 5) mit Seitenteilstücken (7, 8) und Dachteilstücken (6) sowie mit Streben und Steifen (12, 13, 29, 30) aufweist, die sich zwischen den Rahmenbogen erstrecken, wobei die Rahmenbogen im Wetterschutzzustand in einem Abstand voneinander angeordnet sind, wobei die Steifen Klappsteifen sind und jede der Klappsteifen an ihren Enden an zwei der Rahmenbogen so angebracht ist, dass sie klappen kann und ein Klappgelenk (39, 40) hat, **dadurch gekennzeichnet, dass** die Streben Teleskopdiagonalstreben (12, 13) sind, **dadurch**, dass jede Diagonalstrebe an ihren Enden an zwei benachbarten Rahmenbogen so angebracht ist, dass sie klappen kann und teleskopisch ist, so dass ihre Länge geändert werden kann, und jede der Klappsteifen eine stabile Endposition im ausgeklappten Zustand hat, wodurch im eingeklappten Zustand des Wetterschutzmoduls die Diagonalstreben und die Klappsteifen ermöglichen, dass die Rahmenbogen parallel zueinander und nahe aneinander liegen, und sie im ausgeklappten Zustand die Rahmenbogen in einem vorbestimmten Abstand voneinander halten, wobei die Diagonalstreben in der ausgeschobenen Position und die Klappsteifen in ihrer stabilen Endposition verriegelt sind.

2. Klappwetterschutzmodul nach Anspruch 1, **dadurch gekennzeichnet, dass** die Diagonalstreben (12, 13) zwischen mindestens zwei benachbarten Rahmenbogen (3, 4) angeordnet und so angebracht sind, dass sie voneinander unabhängig sind, und so, dass sie klappen können, wobei die unteren Enden jeder Diagonalstrebe unten am ersten und zweiten Rahmenbogen (3, 4) angebracht sind und wobei die oberen Enden am zweiten und ersten Rahmenbogen (4, 3) angebracht sind, und **dadurch**, dass eine der Klappsteifen (29) unter den Diagonalstreben so angebracht ist, dass sie klappen kann, und eine zweite Klappsteife (30) über den Diagonalstreben so angebracht ist, dass sie klappen kann, und zwar zwischen mindestens zwei der Rahmenbogen und auch zwischen den anderen Rahmenbogen.
3. Klappwetterschutzmodul nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** das mittlere Klappgelenk (39, 40) der Klappsteifen am Mittelpunkt der Steife angeordnet ist und eine sogenannte Übertotpunktposition hat, in der die Steife in einer stabilen Position verriegelt ist.
4. Verfahren zum Aufstellen eines Klappwetterschutzmoduls nach einem der Ansprüche 1 bis 3, wobei die Rahmenbogen mit dem an ihnen angebrachten Abdeckteil (2) aufgestellt werden, indem die Rahmenbogen auseinander bewegt werden, gleichzeitig die Teleskopdiagonalstreben (12, 13) ausgeschoben

werden, die zwischen den Rahmenbogen so angebracht sind, dass sie klappen können, und die Klappsteifen (29, 30) in eine stabile Endposition ausgeklappt werden, in der die Abdeckung straff ist, und zudem die Diagonalstreben in ihrer ausgeschobenen Endposition verriegelt werden.

Revendications

1. Module pliable de protection contre les intempéries, constitué d'une partie châssis (1) et d'une partie couvercle (2), dans lequel la partie châssis comprend un certain nombre d'arches de châssis (3, 4, 5) avec des sections latérales (7, 8) et des sections de toit (6) et avec des tirants et des étais (12, 13, 29, 30) s'étendant entre les arches de châssis, lesquelles arches de châssis sont placées à distance l'une de l'autre à l'état de protection contre les intempéries, dans lequel les étais sont des étais pliables, et chacun des étais pliables est fixé, à ses extrémités, à deux des arches de châssis de manière qu'il puisse se replier et ait une articulation de pliage (39, 40), **caractérisé en ce que** les tirants sont des tirants diagonaux télescopiques (12, 13), chaque tirant diagonal est fixé, à ses extrémités, à deux arches de châssis adjacentes de sorte qu'il puisse se replier et soit télescopique pour que sa longueur puisse être modifiés, et chacun des étais pliables a une position d'extrémité stable à l'état déplié, de sorte qu'à l'état plié du module de protection contre les intempéries, les tirants diagonaux et les étais pliables permettent aux arches de châssis d'être mutuellement parallèles et proches l'une de l'autre et qu'à l'état déplié, ils maintiennent les arches de châssis à une distance prédéterminée l'une de l'autre avec les tirants diagonaux verrouillés en position déployée et les étais pliables dans leur position d'extrémité stable.
2. Module pliable de protection contre les intempéries selon la revendication 1, **caractérisé en ce que** les tirants diagonaux (12, 13) sont placés entre au moins deux arches de châssis adjacentes (3, 4) et sont fixés de manière qu'ils soient indépendants l'un de l'autre et de manière qu'ils puissent se replier, avec les extrémités inférieures de chaque tirant diagonal fixées à la partie inférieure de la première et de la seconde arche de châssis (3, 4) et avec les extrémités supérieures fixées à la seconde et à la première arche (4, 3), et **en ce qu'**un des étais pliables (29) est fixé en dessous des tirants diagonaux, de manière qu'il puisse se replier, et un second étai pliable (30) est fixé au-dessus des tirants diagonaux, de manière qu'il puisse se replier, entre au moins deux des arches de châssis et également entre les autres arches de châssis.
3. Module pliable de protection contre les intempéries

selon la revendication 1 ou 2, **caractérisé en ce que** l'articulation de pliage centrale (39, 40) des étais pliables est située au point central de l'étau et a ce que l'on appelle une position à passage brusque, où l'étau est verrouillé en position stable.

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4. Procédé de montage d'un module de protection contre les intempéries selon l'une quelconque des revendications 1 à 3, dans lequel les arches de châssis sont dressées avec la partie couvercle (2) qui leur est fixée, les arches de châssis étant séparées l'une de l'autre, en déployant en même temps les tirants diagonaux télescopiques (12,33) qui sont fixés entre les arches de châssis de manière qu'ils puissent se replier, et en dépliant les étais pliables (29, 30) dans une position d'extrémité stable, dans laquelle le couvercle est tendu, et également en verrouillant les tirants diagonaux dans leur position d'extrémité déployée.

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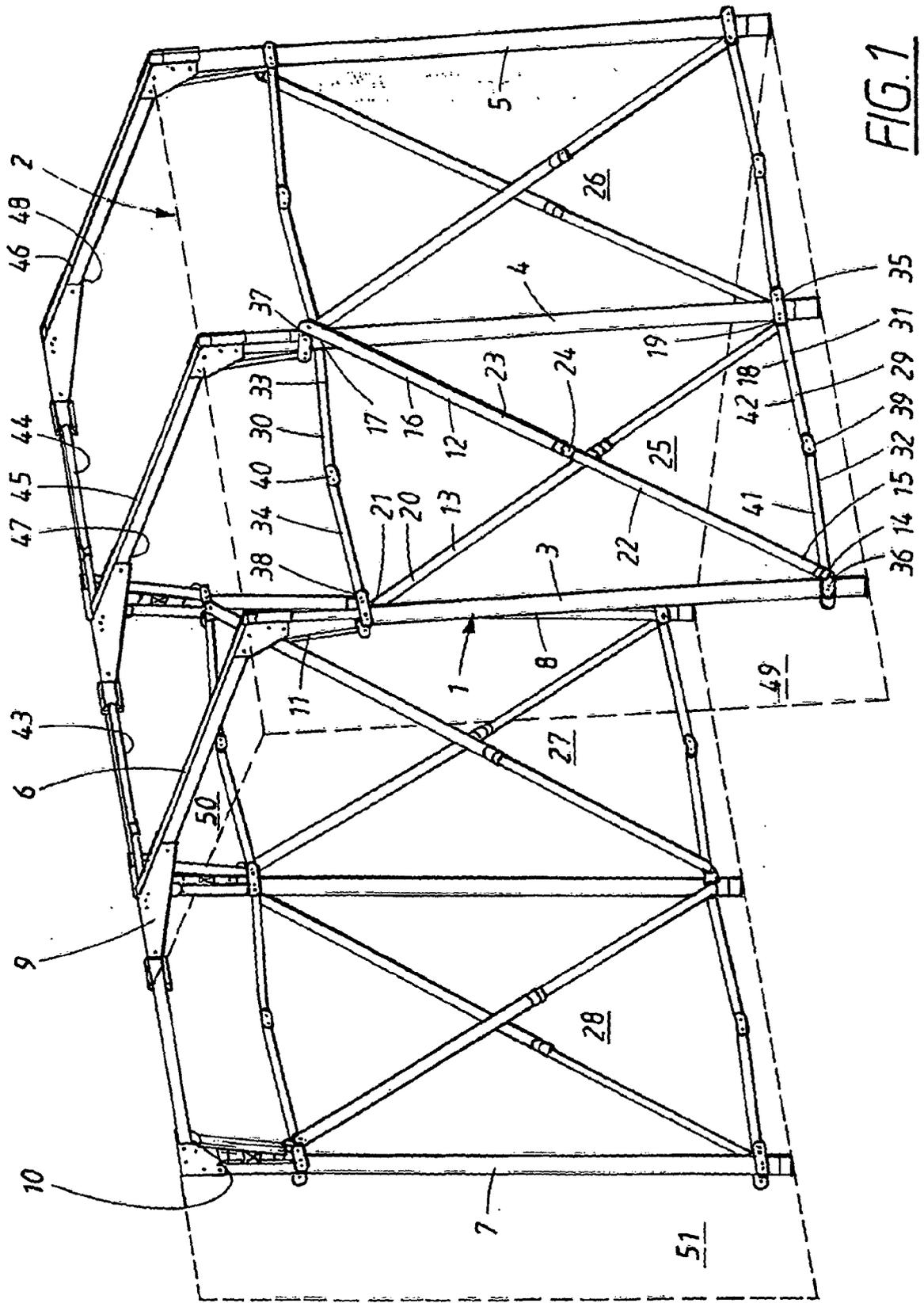
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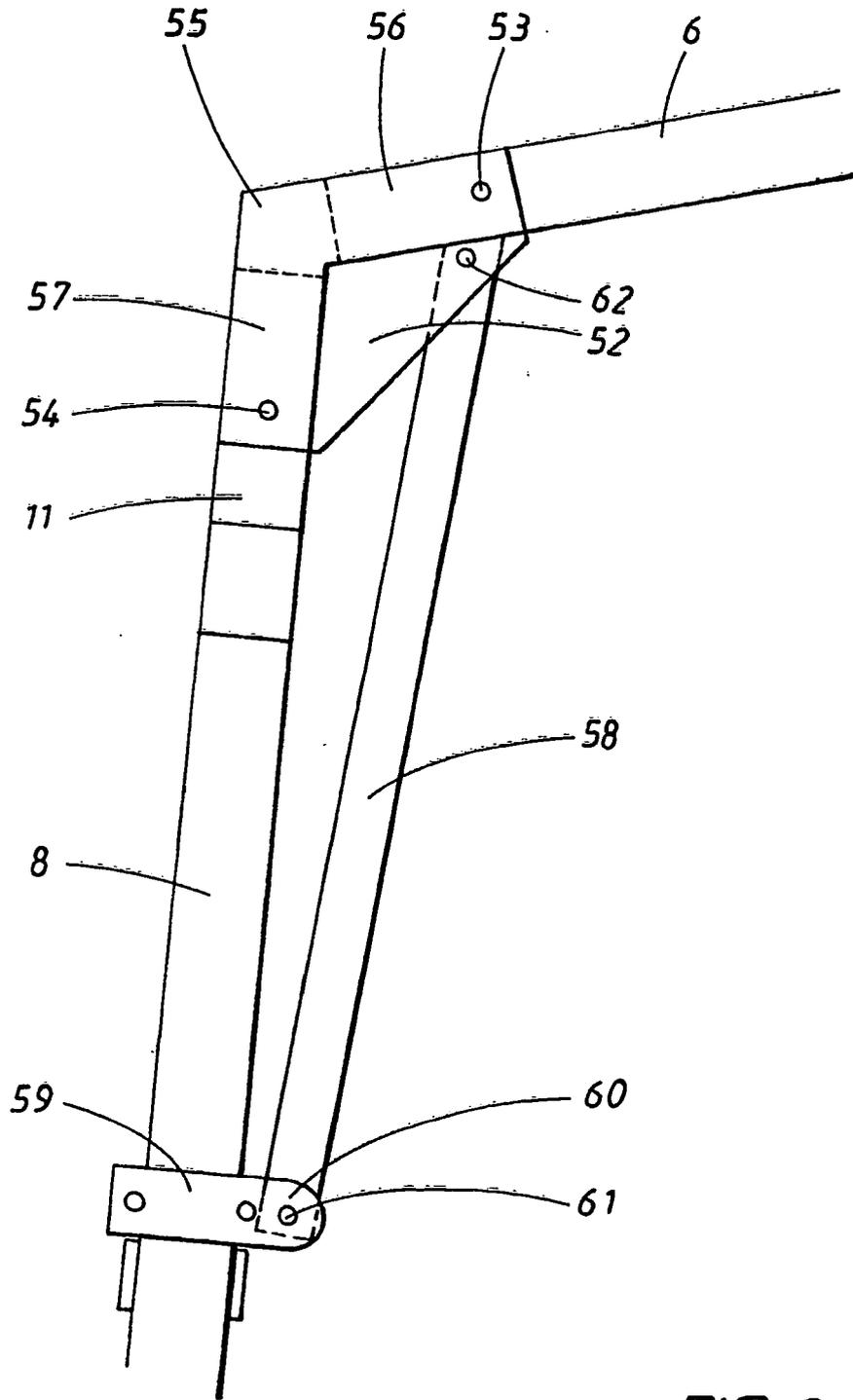


FIG. 2

REFERENCES CITED IN THE DESCRIPTION

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