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(54) **Retractable horizontal awning**

(57) A horizontal withdrawable packet curtain construction comprises a plurality of upward curved covering cloth bearing section members (5) coupling each two adjacent bands of fabric (4) also adapted to operate as cross

gutter channels (6) for draining rainwater through rainwater draining end portions (8) comprising a plurality of bottom funnel holes (9) leading to side channels (10) arranged along two horizontal parallel strut beams (2) and top raising elements (11) for raising holding sidewalls.

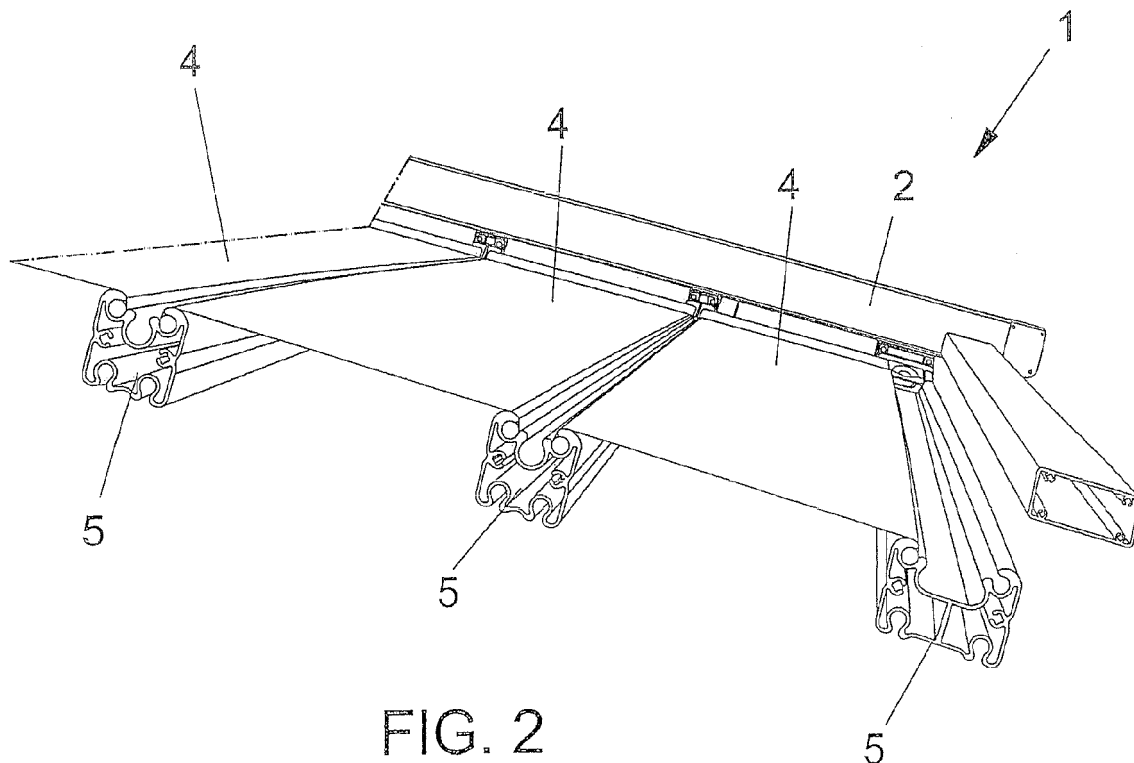


FIG. 2

Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a horizontal withdrawable packet curtain construction.

[0002] As is known in the prior art, "packet" curtain constructions are conventionally so made as to provide a satisfactory covering against rain, by using a single large size cloth covering element or, alternately, a plurality of joining cloth elements which are coupled to one another by several coupling methods, to provide a continuous flat surface, devoid of valleys, and usually inclined at an angle less than 15%, to allow water to easily flow away.

[0003] However, the above mentioned prior use of a single cloth element, providing, by definition, a water tight continuous surface, has the drawback of having difficult to be managed volume and weight, in making, shipment and assembling operations.

[0004] Moreover, if the single cloth covering element is damaged, it must either be fully replaced or repaired by very complex repairing methods.

[0005] The above mentioned approach of using a plurality of adjoining cloth elements is advantageous from the volume managing, making handling, shipment and assembling standpoint.

[0006] However, such an approach has great drawbacks due to the latching systems required for latching or coupling the individual cloth or covering elements to the cloth element bearing profiled section members.

[0007] Rainwater, in actual practice, may access the single cloth element couplings and the channel assembly bearing them in the covering element bearing section members.

[0008] Even if a specific design of the profiled supporting element would allow to overcome the above drawback, the size of the profiled or contoured coupling and supporting elements necessarily requires, for achieving a sufficient water flow away characteristic, an inclination of substantially 20%, which, in several cases, would be very disadvantageous from an aesthetic standpoint.

[0009] In all the above mentioned cases, for providing a continuous covering surface, it is not possible to use intermediate supporting pillar elements within the covered area, as required, since the covering element supporting beams-rails, being overlapped on said covering elements, cannot be accessed without hindering the carriage covering sliding movements and, accordingly, a proper use of the apparatus.

[0010] Furthermore, if a "fractioned" covering element is designed, in a case of heavy thunderstorms with gusts of wind seepage can result and consequently rain dripping in at the coupling sides, no specific systems being provided for the control and holding of water laterally.

SUMMARY OF THE INVENTION

[0011] Accordingly, the aim of the present invention is

to provide such a horizontal withdrawable packet curtain construction, adapted to overcome the above prior art drawbacks.

[0012] Within the scope of the above mentioned aim, a main object of the invention is to provide such a horizontal withdrawable packet curtain construction, adapted to optimize a use of the covering cloth or fabric material, to prevent cutting waste from being generated in making the curtain while facilitating in managing and controlling the making, seaming, transporting and assembling operations.

[0013] Another object of the present invention is to provide such a curtain construction allowing to quickly and fully removing water through the side channels, with a comparatively small inclination of the curtain construction.

[0014] Yet another object of the present invention is to provide such a curtain construction allowing to achieve enhanced widths of the curtain construction hays.

[0015] Another object of the present invention is to provide such a curtain construction allowing to arrange in an adjoining relationship a plurality of independent curtain modules while using all the pillar or upright elements required for making a withdrawing curtain construction with any desired cantilever extension.

[0016] Yet another object of the present invention is to provide such a curtain construction allowing to properly use all the intermediate pillar or upright elements associated therewith, thereby in turn allowing lighter, less expensive, easy to be cut, transported and assembled section members to be used.

[0017] Yet another object of the present invention is to provide such a curtain construction which, owing to its specifically designed structural features, is very reliable and safe in operation.

[0018] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a horizontal withdrawable packet curtain structure, **characterized in that** said curtain construction comprises a plurality of upwardly curved covering cloth or fabric bearing section members.

[0019] Said upwardly curved section members also operate as cross channels for discharging rainwater through specifically designed draining end portions including, at a bottom thereof, funnel like holes leading to side channels and, at a top thereof, raising elements adapted to raise side holding sidewalls.

[0020] According to one aspect of the present invention, the inventive curtain construction module may be arranged in an adjoining relationship with like curtain construction modules to achieve unlimited width continuous curtain surfaces.

[0021] Said curtain construction is preferably suspended, through sliding carriage assemblies, under strut beams including respective guiding rails.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] Further characteristics and advantages of the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment of the invention which is illustrated, by way of an indicative, but not limitative, example, in the accompanying drawings, where:

Figure 1 is a perspective view of the horizontal withdrawable packet curtain construction according to the present invention;

Figure 2 is a further perspective view, on a scale larger than that of Figure 1, of the curtain construction according to the invention;

Figure 3 is yet another perspective view showing a detail of a cross covering cloth element bearing section member;

Figure 4 shows a detail of a dripping funnel assembly;

Figure 5 is an enlarged perspective view showing a detail of a side water draining channel or gutter;

Figure 6 shows a detail of two supporting end portions for supporting the covering cloth bearing section members;

Figure 7 is yet another perspective view of a supporting end portion and a covering cloth bearing section member;

Figure 8 is a partial view showing the inventive curtain construction in a use condition thereof;

Figure 9 is a front elevation partially cross-sectioned view showing a supporting carriage for supporting an end portion of a covering cloth bearing section member;

Figure 10 is yet another view of the supporting carriage for supporting the covering cloth bearing section member end portions; and

Figure 11 is yet another perspective view of an exemplary embodiment of a covering curtain construction made of a plurality of constructional curtain modules according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0023] With reference to the number references of the above mentioned figures, the horizontal withdrawable packet curtain construction according to the present invention, which has been generally indicated by the reference number 1, comprises two structural beams 2, including respective sliding rails 3.

[0024] The curtain construction comprises moreover a plurality of parallel bands 4, made of a fabric or the like material, which are firmly coupled to one another by a plurality of specifically designed covering cloth bearing section member 5, extruded from a metal material with any desired extruding sizes and arrangements.

[0025] Thus, as the covering surface is extended and

subjected to a tension, said cross covering cloth bearing section members 5 will operate to collect rainwater before the latter slides on an adjoining covering cloth element 4, owing to the provision of the gutter channels 6 extending for the construction overall length, as it is clearly shown in Figures 2 and 3.

[0026] More specifically, the cross covering cloth bearing section members 5 comprise corresponding covering cloth detent channels 7, arranged with the access portions 8 thereof so oriented as to allow collected rainwater to be drained only into the gutters 6, while preventing said rainwater from exiting the top rim of the respective section member.

[0027] For allowing collected rainwater to be drained in a more quick manner, thereby greatly increasing the bending flexural strength of the construction, said covering cloth bearing section member 5 is suitably curved by a curving calendaring process and, in such a curved condition being mounted in the system with its bulged or ridged portion upward directed.

[0028] Thus, the enhanced flexural strength, due to the donkey back bulging of the covering cloth bearing section member 5 allows the subject curtain construction to achieve a curtain width up to 5 meters, with a single curtain bay.

[0029] Rainwater, flowing in said gutter channels 6, is then caused to pass through suitably designed end portions 8 supporting respective ends of the covering cloth bearing section members 5.

[0030] Said end portions 8, as is shown, comprise corresponding dripping funnel elements 9, for directly conveying rainwater to side gutter elements 10 which are longitudinally assembled through the overall rainwater path from upstream to downstream of the subject construction.

[0031] As is further shown, the end portions 8 further comprise a latching and clamping element 11 for latching and clamping the covering cloth 4 flap, having a length larger than that of the corresponding covering cloth bearing section member 5.

[0032] Said latching and clamping element 11 is so designed as to transversely tension the covering cloth 4, by tension screws engaged in corresponding channels 12 which are upward inclined from a horizontal line thereby allowing said covering cloth 4 to be properly tensioned while raising in its rim portion the edge portion 14 of said covering cloth through the overall width thereof.

[0033] Thus, owing to the provision of the latching and clamping element 11 at the end portions of each covering cloth bearing section member 5, as the curtain construction is tensioned, two restraining sidewalls are formed along the edge portions 14 of the covering cloth elements 4, thereby preventing water from overflowing.

[0034] On the other hand, as from the curtain construction tension is released, then its sidewall will be brought to a non tensioned condition, thereby allowing the curtain to be properly arranged with a packet arrangement.

[0035] In other words, the inventive curtain construc-

tion, comprising a plurality of covering cloth elements 4 and covering cloth element bearing section members 5, in an extended condition thereof, under the applied tension, will assume the same "bulged" geometry as the covering cloth element bearing section members.

[0036] Thus, water flowing on the individual covering cloth element, and not collected in the gutter channels, will be caused to laterally flow away from the related surface and being held by said projecting sidewalls to be returned to the gutter channels 6.

[0037] The above disclosed curtain construction allows water to flow away even with an extended curtain construction inclination of only 8%, which small inclination cannot be achieved in prior art covering curtain systems.

[0038] In other words, said advantageous small inclination is achieved in the inventive curtain construction since water pockets are prevented for forming there-through.

[0039] As shown, the end portions 8 are suspended on carriages 15 by two suspending cylinders 16 which, owing to a properly designed cross clearance, allow the section members 6 and related covering cloth elements 4 to be always arranged in an optimum arrangement position, even if the strut beams 2 are not perfectly mutually parallel.

[0040] Said carriages 15 comprise moreover a double pair of wheel elements 17 for preventing them from being subjected to a possible pitching movement due to a torque applied by the tensioned calendered section members 6 preventing the overall system from assuming a desired arrangement configuration.

[0041] In particular, said sidewalls 13 allow to arrange adjoining with one another a plurality of curtain construction modules, to provide a continuous covering surface with a practically unlimited width, which constructional modules may be easily controlled, both in opening and closing the covering construction, in an independent manner.

[0042] More specifically, the system withdrawing and extending features are achieved by a toothed belt assembly sliding in the strut beams and being mounted with a loop mounting arrangement between a belt tension pulley and a gear wheel.

[0043] Said toothed belt operatively drives a first carriage, to which said belt is firmly anchored, said first carriage, in turn, owing to the covering cloth element tension, downward driving, or upward displacing, all the other carriages, one after the other.

[0044] It has been practically found that the invention fully achieves the intended aim and objects.

[0045] In fact, the invention has provided a horizontal withdrawable packet curtain construction comprising a plurality of cross covering cloth elements, for protecting from rain and sun, which may be easily arranged in an adjoining relationship with like curtain construction modules to provide continuous covering surfaces of practically unlimited width extensions.

[0046] Moreover, the inventive curtain construction module allows to optimize the use of its fabric material, which has conventionally a size not larger than 80 x 500 cm, thereby preventing waste materials from being generated in the fabric cutting operation, while facilitating fabric seaming or stitching, transporting and assembling operations.

[0047] Furthermore, the provision of cross covering cloth bearing section members, as properly curved and provided with respective gutters, allows to achieve a slightly bulged surface whereby water is quickly and fully drained into the side gutter channels, even with a curtain construction inclination of only 8%.

[0048] Thus, the cross curved covering cloth element section members allow to achieve larger bay width extensions.

[0049] Moreover, the water draining system, including gutter channels along the sides of each covering module, from upstream to downstream, is so designed as to split into fractions as desired the overall curtain surface, as well as the section member and guiding arrangement length extensions.

[0050] In particular, in the inventive curtain construction module curtain components are used having a length not larger than 600 cm, to provide withdrawing covering surfaces with, for example, a size of 2,000 x 2,000 cm, corresponding to 400 m².

[0051] Moreover, the inventive water draining system, including gutter channels along the sides of each covering modules, from upstream to downstream, permits a plurality of independent covering modules to be arranged adjoining one another while properly supporting, by suitably designed supporting brackets, the required beam-rail arrangements.

[0052] This constructional feature in turn allows to use, for supporting the beam-rail structure, all the uprights necessary for making withdrawing covering cloth assemblies of any desired cantilever extension.

[0053] Finally, the provision of supporting, by intermediate supporting pillar or uprights, inside the covered area, allows to use lighter and less expensive section members, more easy to be cut, transported and assembled, the results being the same.

[0054] In practicing the invention, the used materials, as well as the contingent size and shapes, can be any, depending on requirements.

Claims

1. A horizontal withdrawable packet curtain construction, **characterized in that** said curtain construction comprises a plurality of upward curved covering cloth bearing section members also adapted to operate as cross gutter channels for draining rainwater through rainwater draining end portions comprising a plurality of bottom funnel holes leading to side channels and top raising elements for raising holding

sidewalls.

2. A curtain construction, according to claim 1, **characterized in that** said curtain construction is a curtain construction module to be adjoined to like construction modules for providing unlimited width continuous curtain construction surfaces. 5
3. A curtain construction, according to claim 1, **characterized in that** said curtain construction is suspended, by suspending sliding carriages, under strut beams including a plurality of strut beam rails. 10
4. A curtain construction, according to claim 3, **characterized in that** said curtain construction comprises two curtain construction beams, having respective sliding rails, and a plurality of parallel bands, made of a fabric or a like material, which are firmly coupled to one another by a plurality of covering cloth element bearing section members, made of an extruded metal material, wherein, in an extended and tensioned condition of said curtain construction, said cross covering cloth bearing section members collect rainwater for preventing said rainwater from flowing on adjoining curtain construction cloth elements, due to said gutter channels extending through the overall length thereof. 15 20 25
5. A curtain construction, according to claim 4, **characterized in that** said cross covering cloth element bearing section members comprise corresponding covering cloth element detent channels, having a channel access so oriented as to allow collected water to be drained only into the gutter channels while preventing said rainwater from overflowing from a top edge portion of each said section member. 30 35
6. A curtain construction, according to one or more of the preceding claims, **characterized in that** each said covering cloth bearing section member is calendered to a curved configuration and mounted in the curtain construction with its bulged portion upward directed. 40
7. A curtain construction, according to one or more of the preceding claims, **characterized in that** said curtain construction comprises moreover end portions supporting corresponding covering cloth bearing section member end portions thereinto is caused to flow water flowing in said gutter channels, said end portions including water draining funnel elements for conveying rainwater directly into side gutter channels as longitudinally mounted along all an upstream to downstream path of said curtain construction. 45 50 55
8. A curtain construction, according to one or more of the preceding claims, **characterized in that** said end portions comprise a respective latching and clamping element for latching and clamping that covering cloth element flap exceeding a length of said covering cloth element bearing section member, said latching and clamping element being adapted to transversely tension the covering cloth element by tension screws applied to corresponding tension channels which are upward inclined from a horizontal line thereby allowing said covering cloth element to be both tensioned and raised with an end edge portion thereof through the overall width thereof thereby, with the curtain construction in a tensioned condition, two holding sidewalls are formed along each said covering cloth element, said sidewalls preventing water from overflowing.
9. A curtain construction, according to one or more of the preceding claims, **characterized in that** said curtain construction has a maximum inclination of 8% while allowing rainwater to properly flow away.
10. A curtain construction, according to one or more of the preceding claims, **characterized in that** said end portions are suspended to suspending carriages by a pair of suspending cylinders crosswise spaced as to cause said section members and covering cloth elements supported thereby to be always arranged in an optimum arrangement position even if the strut beams therefor are not perfectly in parallel arranged, said carriages comprising two pairs of operating wheels for preventing said carriages from pitching under a tension torque on said calendered section members.

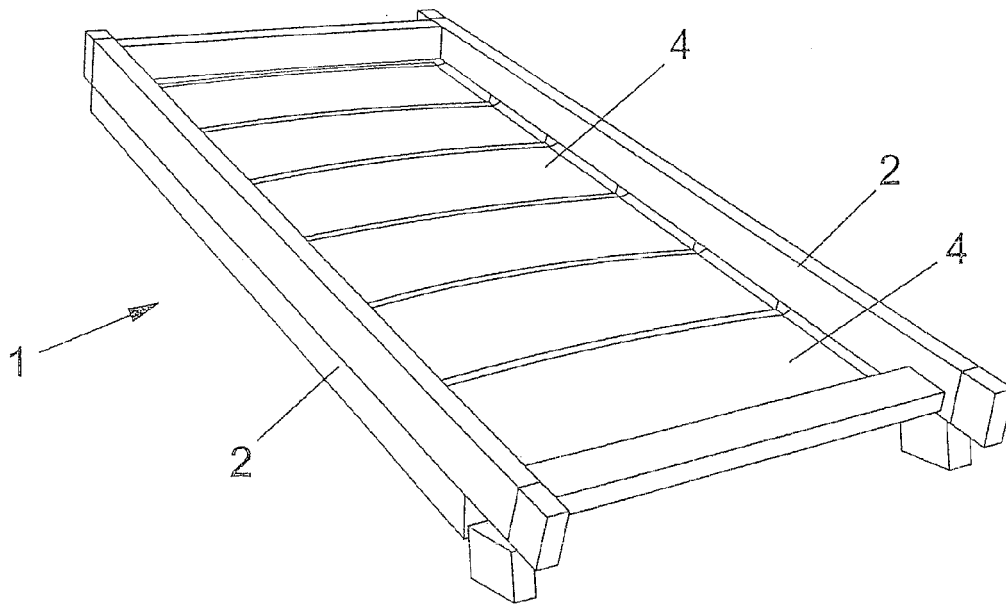


FIG. 1

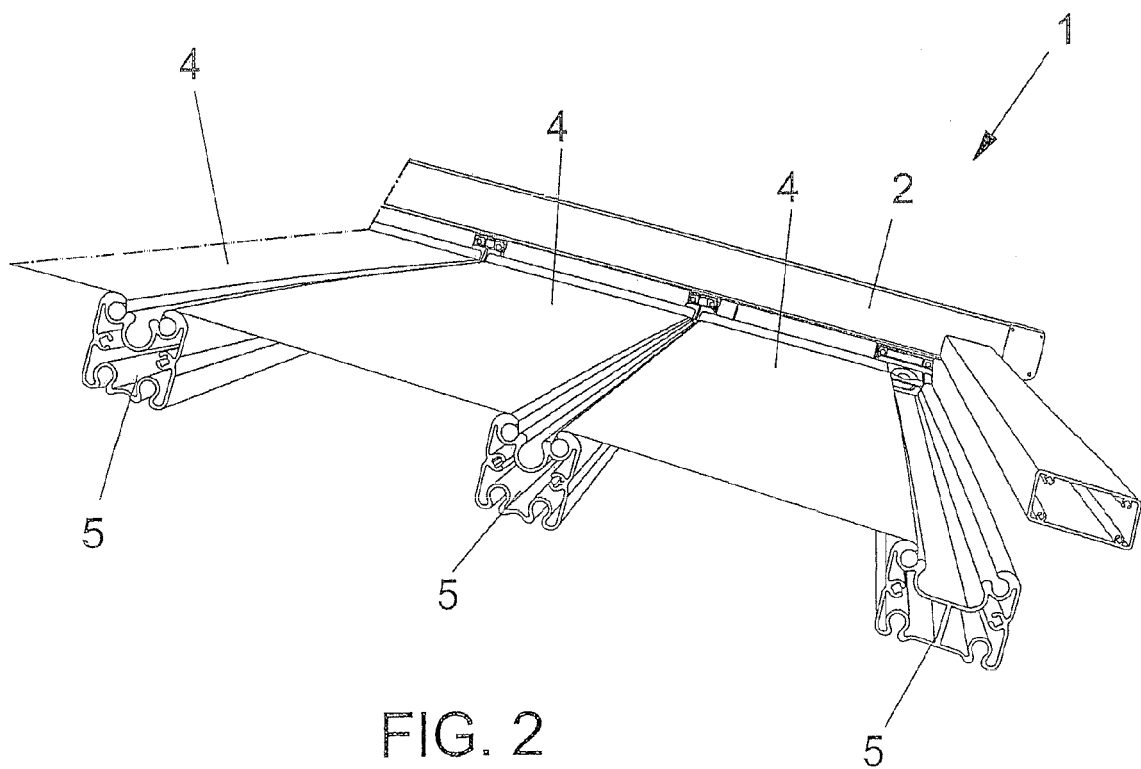


FIG. 2

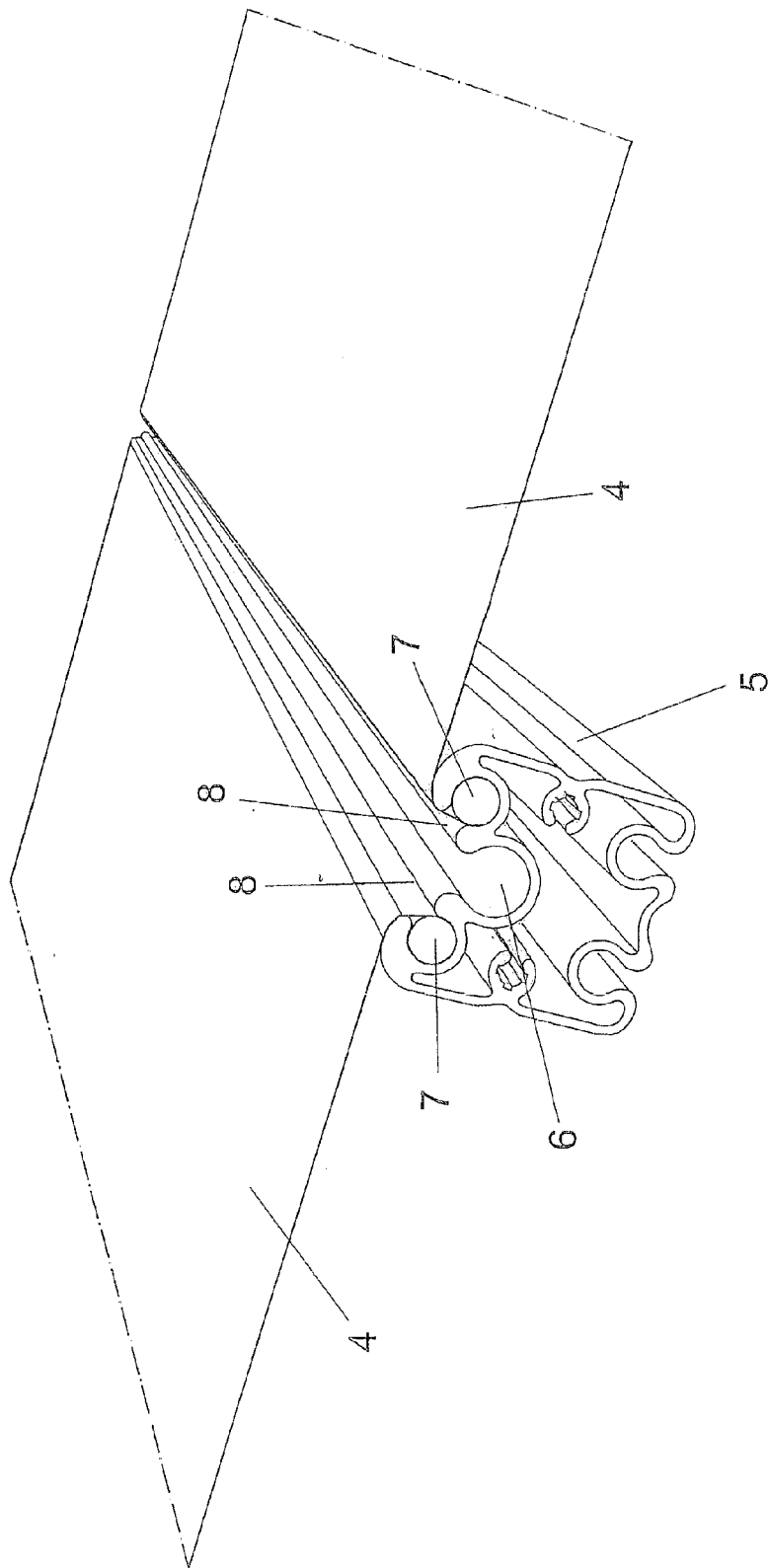


FIG. 3

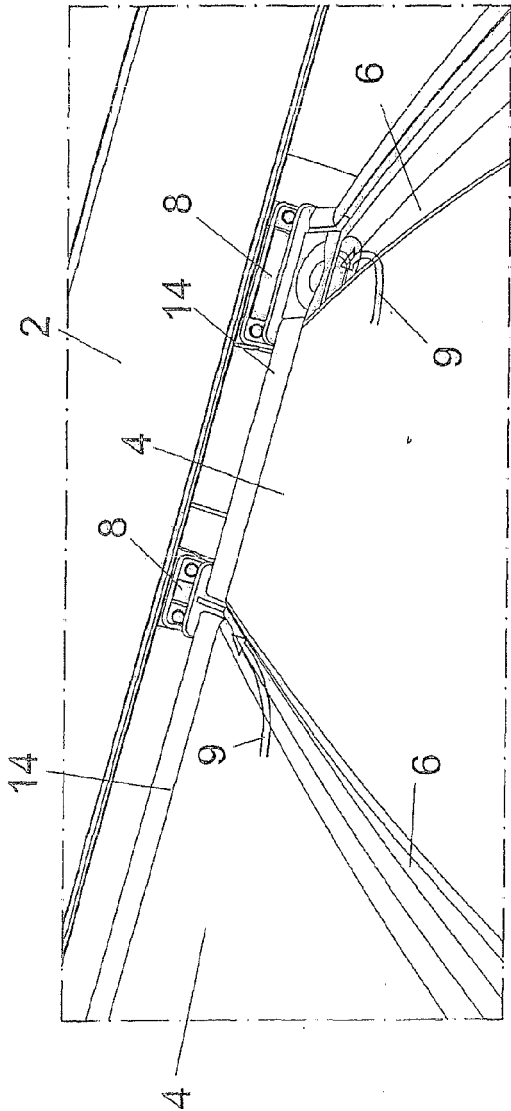


FIG. 4

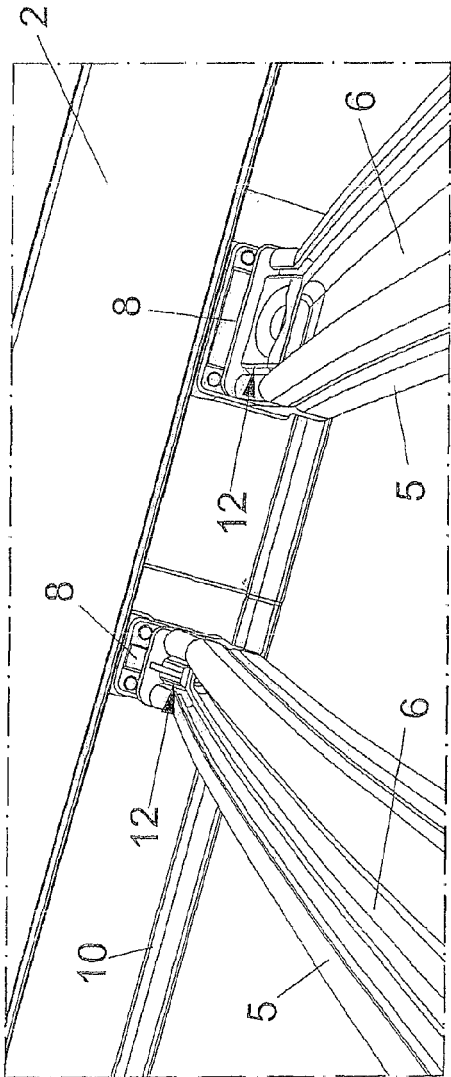


FIG. 5

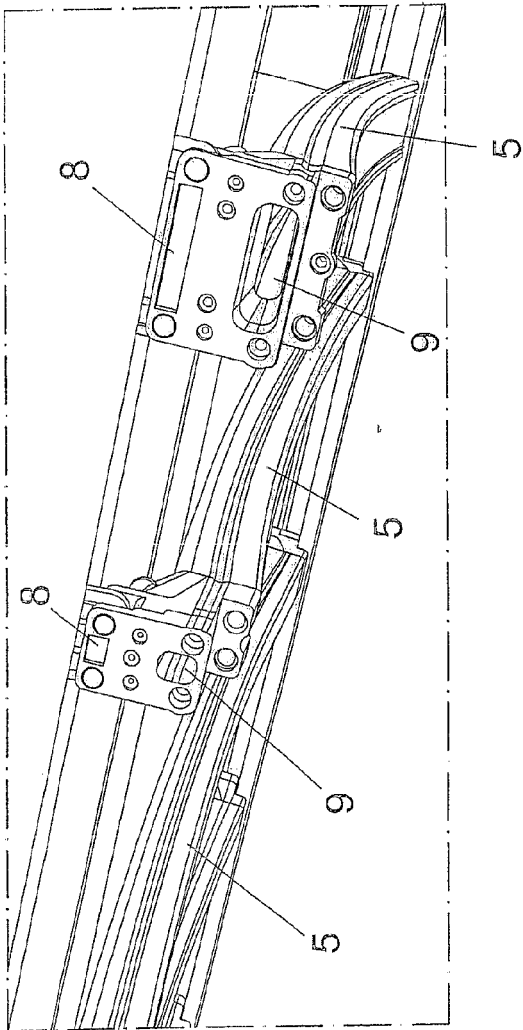


FIG. 6

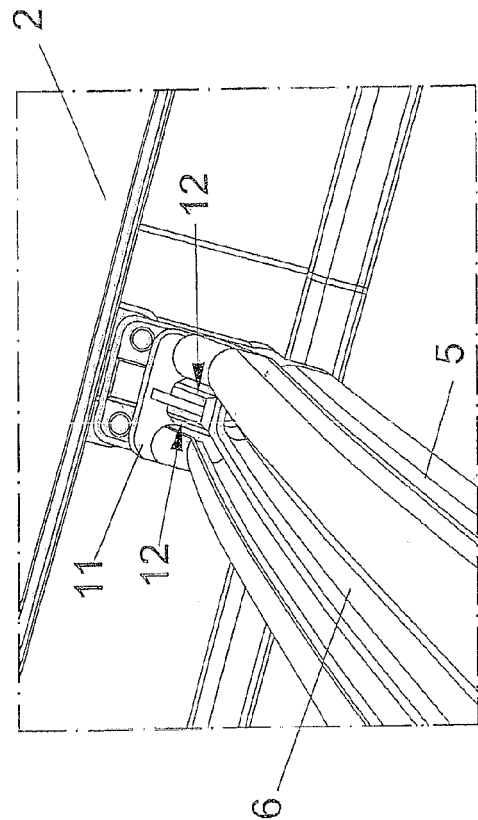


FIG. 7

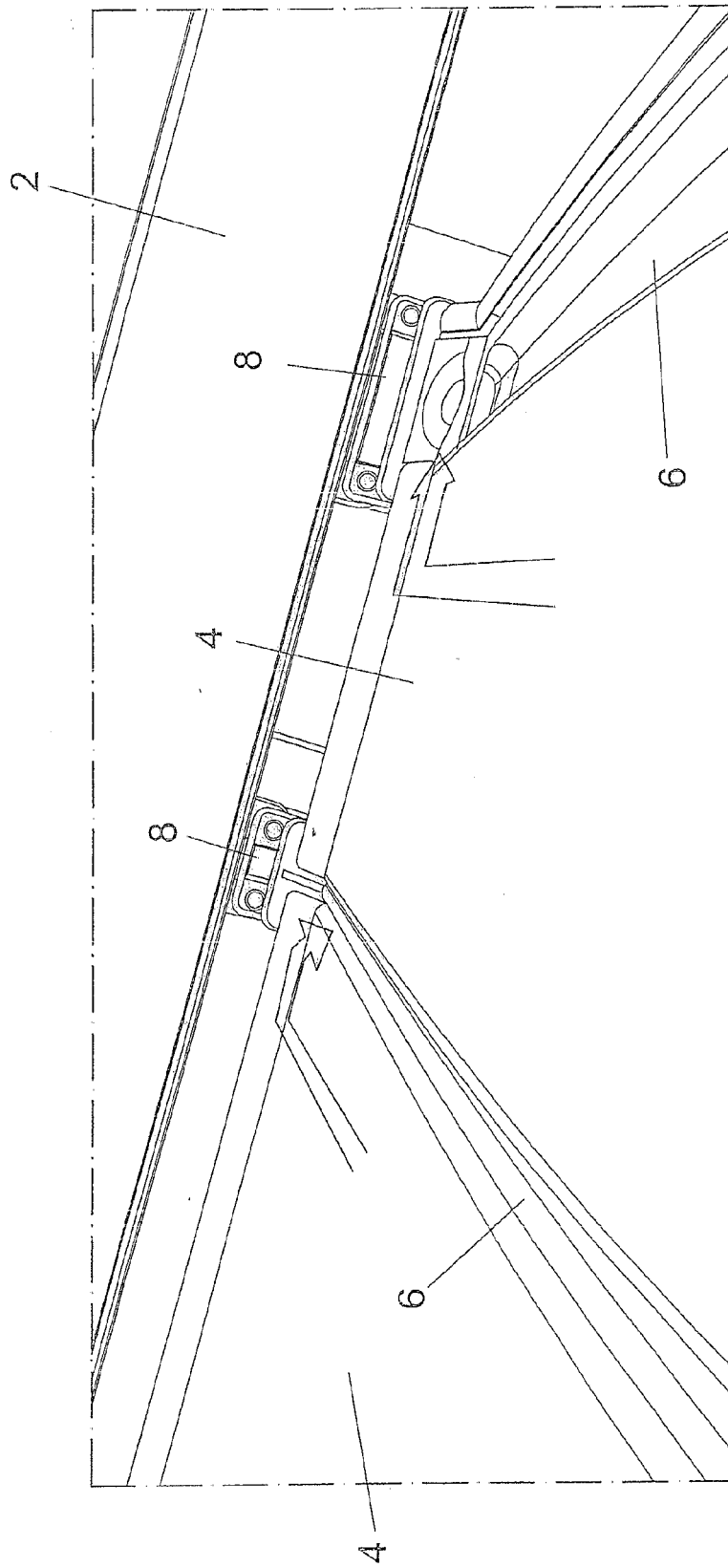


FIG. 8

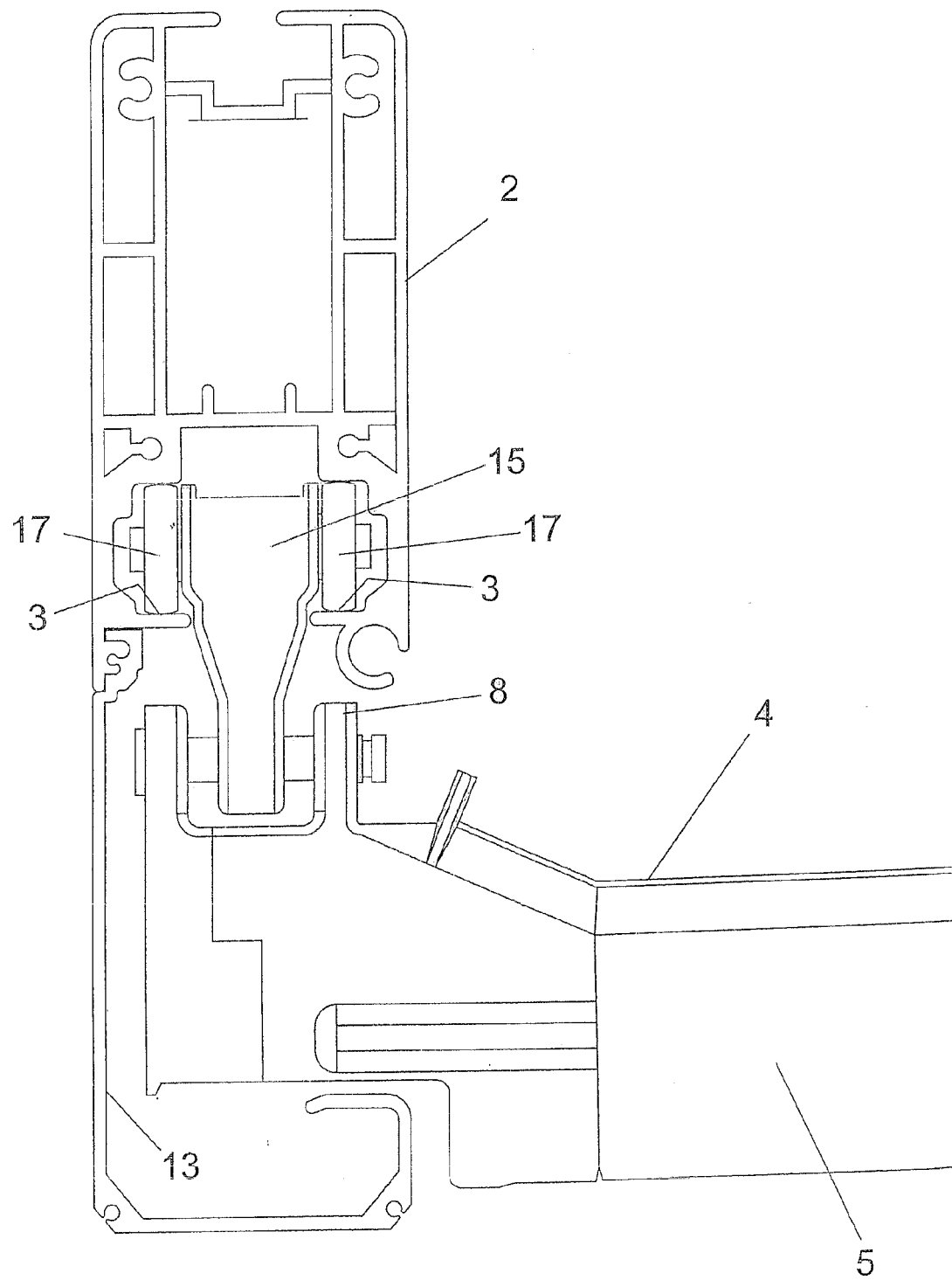


FIG. 9

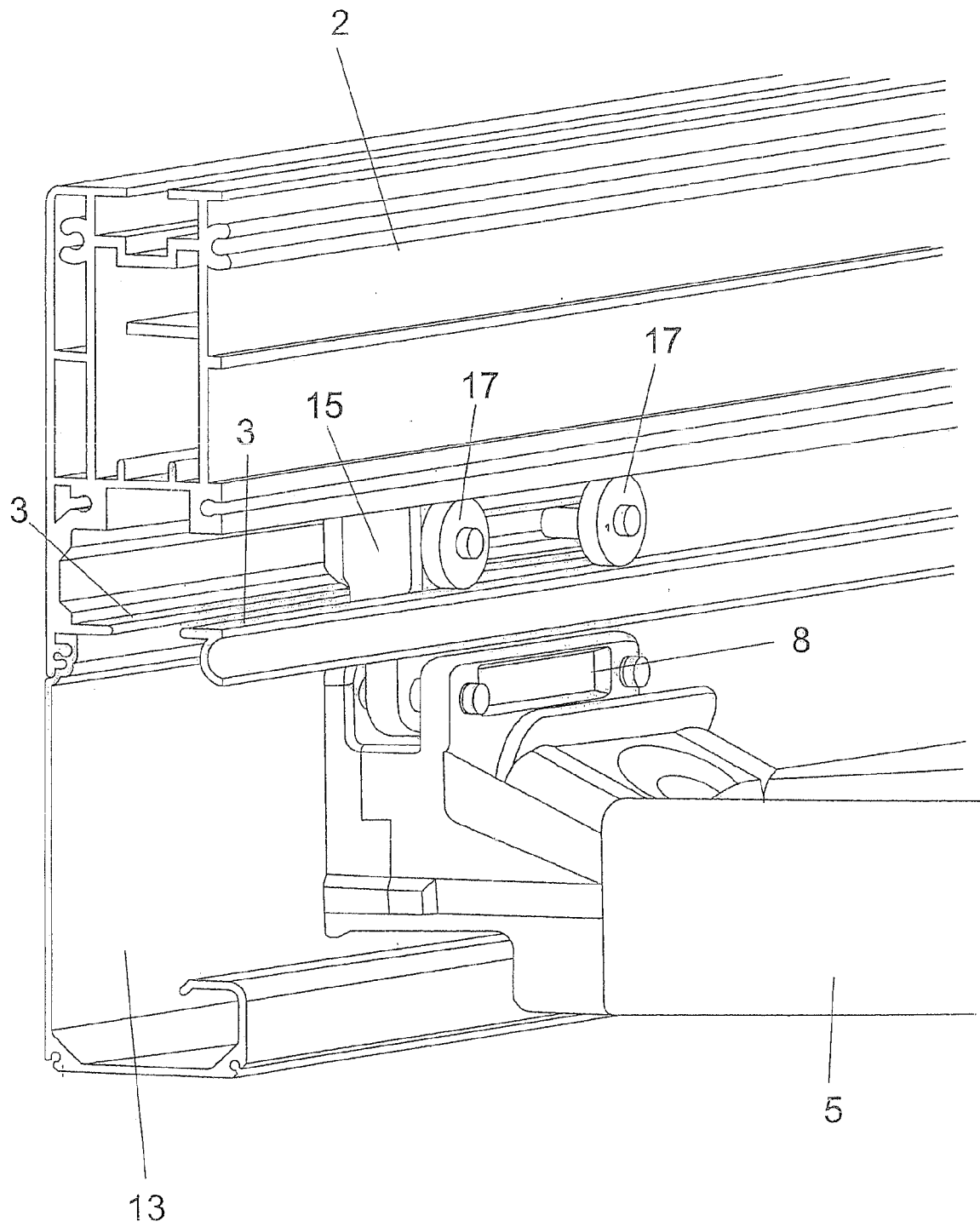


FIG. 10

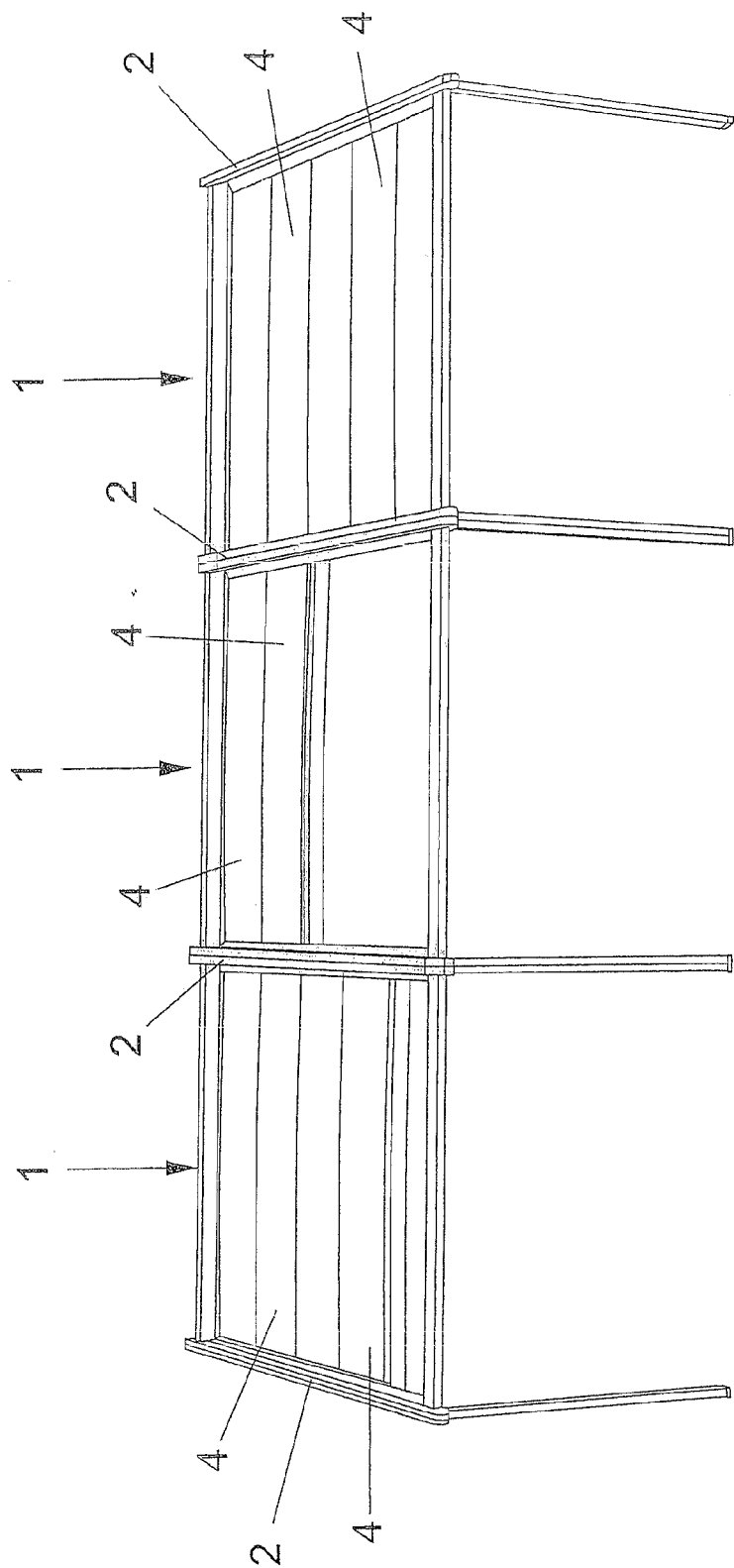


FIG. 11



EUROPEAN SEARCH REPORT

Application Number
EP 12 18 6936

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 2 136 012 A1 (BRIANZATENDE S P A [IT]) 23 December 2009 (2009-12-23) * figures 3,6 *	1-10	INV. E04F10/02 E04F10/06
A	IT B0 980 243 A1 (CORRADI S R L [IT]) 15 October 1999 (1999-10-15) * figures 1-3 *	1-10	
A	WO 02/092938 A1 (SPICKER UWE [DE]) 21 November 2002 (2002-11-21) * figures 1-4 *	1-10	
A	EP 1 842 980 A2 (CORRADI S R L [IT]) CORRADI S P A [IT]) 10 October 2007 (2007-10-10) * figures 1-4 *	8	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04F E04H E04B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 8 January 2013	Examiner Brucksch, Carola
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 12 18 6936

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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08-01-2013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2136012	A1	23-12-2009	NONE
IT B0980243	A1	15-10-1999	NONE
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