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(54) **Beam fastening assembly and kit for a swing**

(57) An assembly (1) is described, at least comprising:

- a bearing beam (2) with a rectangular cross section,
- a swing (7) or other item of children's play equipment (8) suspended from a bearing beam,
- two supports for supporting the bearing beam (2) near its ends (4, 5) at a distance from a ground surface, the bearing beam (2) being positioned in such a way that in a vertical cross section (12) through

the bearing beam (2) the point (50) of the bearing beam (2) furthest away from the ground surface is formed by one corner point (50) of said cross section (12) which is enclosed by two longitudinal sides (51, 52) of the bearing beam (2). A fastening bracket (20) for fastening the supports to the bearing beam (2) and the kit composed of loose parts for constructing such an assembly (1) are also described.

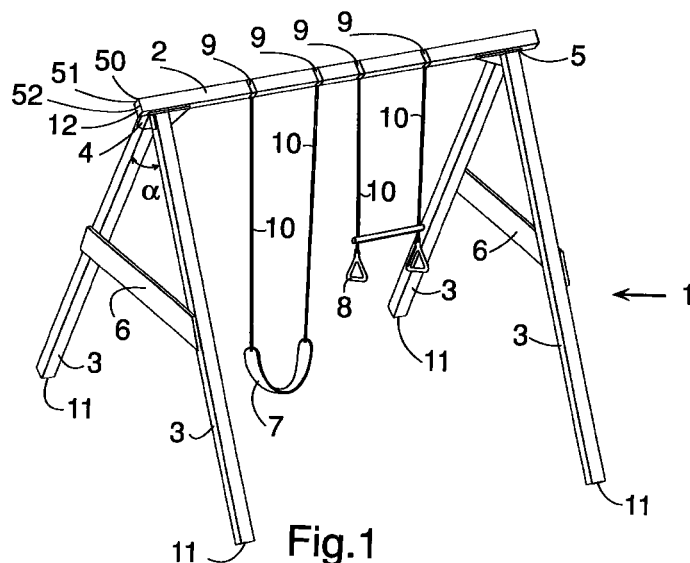


Fig.1

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Description

[0001] The present invention relates in the first place to an assembly at least comprising:

- a bearing beam with rectangular cross section,
- a swing or other item of children's play equipment suspended from a bearing beam,
- two supports for supporting the bearing beam near its ends at a distance from a ground surface.

[0002] Such assemblies for bearing swings and climbing ropes etc. are generally known, and are used in playgrounds and various public facilities in the living environment of children. Such assemblies are also used in the private sphere, in the garden or in the house. Such assemblies are generally constructed of wooden beams which are rectangular in cross section. For the supports, it is common to use beams with a smaller cross section than that of the bearing beam, which because of the load is of heavier construction, i.e. having a larger cross section. The disadvantage of this is that beams of different dimensions are needed for the construction of such an assembly, and that the bearing beam is expensive because of the cross-sectional dimensions. Assemblies constructed of round metal tubes are also known in the field. The disadvantage of these assemblies is the fact that metal for external use requires a great deal of maintenance.

[0003] Such an assembly is described in, for example, US-A-5,364,312. This assembly can be constructed from a number of wooden supporting beams, which form an A-frame, and a bearing beam, which is supported near its ends by the A-frames. The bearing beam can be made of a round metal tube, or of one or more wooden beams connected to a bracket on the A-frame.

[0004] The bearing beam which is rectangular in cross section is substantially disposed in such a way that the long sides of the cross section of the beam run substantially perpendicular relative to the ground surface on which the assembly is placed. The short sides of said cross section run substantially parallel to said ground surface.

[0005] As already stated above, the disadvantage of the abovementioned assembly is that similar beams cannot be used for the supporting beams and the bearing beam. In view of the load on the assembly when it is in use, the bearing beam must be of a heavier construction.

[0006] The abovementioned disadvantages in practice constitute a considerable problem, for which no solution was found until today. There is therefore a demand for improved assemblies of the type mentioned in the preamble.

[0007] The object of the present invention is to meet this demand, and to that end the invention in the first place provides a device of the abovementioned type, which is characterized in that the bearing beam is posi-

tioned in such a way that in a vertical cross section through the bearing beam the point of the bearing beam furthest away from the ground surface is formed by one corner point of said cross section which is enclosed by two longitudinal sides of the bearing beam. Because the cross section of the bearing beam is rectangular, this means that the point of the bearing beam which in vertical cross section is closest to the ground surface is also formed by one corner point (situated obliquely opposite the first-mentioned corner point) of the abovementioned cross section of the bearing beam.

[0008] As already mentioned, the bearing beam is supported by two supports, which are placed on either side of the bearing beam. Said supports in turn rest upon the ground surface, for example a lawn or a play area. Of course, this surface does not need to be levelled. It is also possible for the ground surface to be sloping, although for the sake of simplicity a horizontal ground surface will be assumed in the remainder of the text.

[0009] The vertical cross section through the bearing beam lies in a plane which is perpendicular to the ground surface. If the bearing beam runs parallel to the ground surface, said surface is substantially perpendicular to the longitudinal axis of the bearing beam. The corner points of such a cross section correspond to the points of intersection of the ribs of the bearing beam and said surface. As already stated above, the point of the cross section situated furthest away from the ground surface is formed by a corner point, and not by a rib. In the last-mentioned case the rib runs parallel to the ground surface, and the bearing beam is positioned "straight".

[0010] In the present case the bearing beam is therefore rotated about the longitudinal axis of the bearing beam. In the application this position of the bearing beam will also be referred to as "turned" or "rotated". This position ensures that the resistance to bending of the bearing beam is improved compared with the usual straight position of a bearing beam in an assembly from the prior art. By this measure, greater spans of the bearing beam or greater loads and/or higher safety margins with regard to the load of the bearing beam can be achieved with the same cross section of the bearing beam, without a larger beam having to be selected.

[0011] The assembly is advantageously designed in such a way that the line through the two points furthest away from each other in the vertical cross section through the bearing beam run substantially perpendicular to the ground surface. Through this rotation of the bearing beam, the optimum load-bearing capacity and the greatest resistance to bending are obtained.

[0012] The bearing beam of the assembly advantageously runs substantially parallel to the ground surface, although the bearing beam can also be at an angle to the ground surface, and is thereby suitable, for example, for the fastening of climbing ropes. Placing the bearing beam in a straight position has the advantage

that swings can also be fastened to it.

[0013] It is preferable to design the assembly in such a way that the bearing beam has a square cross section. The advantage of a square cross section is the ready availability and simple assembling thereof, which results in a sturdy assembly.

[0014] In a special embodiment of the invention the longitudinal sides of the bearing beam which enclose the abovementioned corner point have equal angles χ , χ' relative to the plane running through the abovementioned corner point, which plane runs parallel to the ground surface.

[0015] This imaginary plane touches the vertical cross section of the bearing beam at the point furthest away from the ground surface. The angles χ , χ' between this plane and the two longitudinal sides of the bearing beam (which define the abovementioned corner point with an angle ω), in fact show the degree of rotation of the bearing beam. The angle χ is preferably the same relative to the abovementioned plane for both longitudinal sides, with the result that the bearing beam has the maximum resistance to vertical loading. All this will be explained in greater detail in the description of the figures.

[0016] In the specific embodiment of a bearing beam with a rectangular cross section, maximum resistance to bending is achieved if the abovementioned longitudinal sides are turned at least 30° , and preferably approximately 45° , relative to the horizontal. In other words, χ and χ' preferably lie between 30° and 60° , and are most preferably approximately equal to 45° . The term "approximately" includes a deviation of 5° here.

[0017] In another embodiment of the invention at least one of the supports is in the form of an inverted V, and the bearing beam is connected to the support near the point of intersection of the legs of the support. Making the support an inverted V shape ensures that a sturdy support is obtained for the bearing beam, with two supporting beams defining the inverted V shape. Likewise, in order to obtain the optimum stability, it is possible to interconnect the supporting beams by means of a connecting beam. An A-shaped support is obtained in this way. However, the support can also be in the form of a single beam, which is placed, for example, substantially perpendicular to the ground surface.

[0018] The bearing beam is advantageously supported at at least two points. This bearing beam is therefore generally supported by two of the abovementioned supports which are an inverted V shape. However, it is also possible for one of the ends of the bearing beam to be connected to, for example, a wall of a house or other sturdy support. Although it is possible in principle to design the assembly with a support fastened, for example in or near the centre of the bearing beam, such an embodiment is not preferable, on account of the great loads on the fastening point.

[0019] If too great a span is selected for the bearing beam, with the result that the bending of the bearing

beam becomes inadmissibly great, an additional support can be placed between the abovementioned supports.

[0020] In a preferred embodiment of the invention the angle between the legs of the support is between 50° and 70° , and it is more preferable for this angle to be approximately 60° . This gives the assembly optimum sturdiness, without the assembly taking up much space on the ground surface.

[0021] Placing the legs of the support at a sufficiently large angle ensures that good stability and height of the bearing beam are achieved with legs of limited length. The angle enclosed between the legs of the support is advantageously part of an equilateral triangle formed by the two legs of the support and the ground surface. The vertical load on the assembly is thus exerted proportionately by way of the legs of the support towards the ground surface.

[0022] The angle between the plane of the two legs of the support and the bearing beam advantageously lies between 90° and 110° . From the point of view of assembling, the simplest and most efficient construction is obtained if the abovementioned angle is 90° . If the abovementioned angle is greater than 90° , the distance of the legs from the swing suspended from the bearing beam will be greater, which is safer; and the bearing beam can also be made shorter as a result. In addition, such a construction produces a very stable assembly, which is trapezoidal in side view. An angle of 100° has been found very advantageous in this respect.

[0023] In another preferred embodiment of the invention the legs of the supports and the bearing beam are made of the same material with substantially the same cross section.

[0024] This makes it simple to assemble the individual parts. In addition, it is guaranteed that the material will be readily available and easy to purchase.

[0025] The assembly preferably comprises fastening means for connecting the bearing beam to the support. Through the use of suitable fastening means, a simple connection can be formed between the bearing beam and the support. Owing to the fact that the fastening means guarantee a simple connection between the bearing beam and the support, no complicated connections are necessary.

[0026] The fastening means is preferably in the form of a fastening bracket for fastening together at an acute angle α a first and a second beam near the ends of said beams and a third beam near the abovementioned corner point, the third beam running at an angle ε through the plane through the first and second beams, which fastening bracket is characterized in that it at least comprises: two substantially mirror-symmetrical support halves (21, 21'), each support half comprising a bearer plate (30, 30') with a first side (31, 31') and an adjoining second side (32, 32'), which sides enclose angle ε , while the bearer plates (30, 30') are connected to each other in such a way that they enclose angle α ,

and the second sides (32, 32') of the bearer plates (30, 30') run parallel to each other, and onto which first side (31) first lip (33) is formed at an angle β of approximately 90° , thereby forming a profile which is L-shaped in cross section, for rigid fastening against said profile of the first or the second beam (3), onto which second side (32) a second lip (35) is formed, at an angle γ of at least 90° between the second lip (35) and the bearer plate (30), in such a way that substantially a right angle δ is formed between the second lip (35) of the first bearer plate (30) and the second lip (35') of the second bearer plate (30'), said second lips (35, 35') forming a second profile which is L-shaped in cross section, for rigid fastening of the third beam (2) against said second profile.

[0027] In this case the first and second beam are the supporting beams (the legs) of the inverted V-shaped assembly, and the third beam is the bearing beam.

[0028] In view of the above, angle ε preferably lies between 90° and 110° , 90° being preferred.

[0029] For fastening of the first or second beam, the first lip and the bearer plate have apertures near the abovementioned first side, for fastening the beam in question to the bracket by means of suitable fixing means such as, for example, screws or nails. The second lip of each support half therefore preferably likewise has apertures for fastening the third beam, the bearing beam, to the bracket. In this connection the term "near" means that the distance between the apertures in the bearer plate or the lip and the nearest side of the bearer plate is less than the width of the side of the beam to be fastened there. The abovementioned distance is therefore preferably shorter than the distance between the two opposite long sides of the first lip.

[0030] Such a bracket is known per se from US-A-5,524,397, for making a roof construction. This publication describes a bracket for connecting two wooden beams at an angle, said beams meeting at the position of the ridge of a roof, and thus supporting the roof. However, with this bracket the third beam (with a rectangular cross section) is not rotated, but is supported in a straight position relative to the ground surface (in other words, two opposite sides of the beam run parallel to the ground surface). Moreover, the bracket is suitable only for fastening together beams of a fixed size.

[0031] The advantage of the bracket according to the invention is that it can accommodate various dimensions of beams, without any adjustment being necessary. Moreover, the fastening bracket can accommodate the bearing beam according to the invention turned about the longitudinal axis.

[0032] Said fastening bracket can connect two supporting beams to the bearing beam in a simple manner, thereby forming a V-shaped support, the bearing beam according to the invention being turned, and the frame being supported in such a way that the inverted V-shaped support provides a stable support for the bearing beam. Furthermore, the fastening bracket according

to the invention makes simple assembling possible.

[0033] The bracket is preferably designed in such a way that the second side of the first support half rests against the second side of the second support half. The advantage of this is that the stability of the assembly is increased, inter alia, by the fact that the forces exerted by the assembly upon the bracket during use are distributed between the two legs of the support.

[0034] The second lip of the two support halves advantageously extends beyond the first side of the corresponding bearer plate. This extending part provides a stable fastening surface and extra space for additional fastening points to the bearing beam, with the result that a solid fastening of the bracket to the bearing beam is guaranteed.

[0035] The bracket is advantageously designed in such a way that the side of the first lip adjoining the side with which the first lip is formed on the bearer plate concerned, which side is situated near the second lip of the bearer plate concerned, encloses an angle the size of γ with said side with which the first lip is formed on the bearer plate.

[0036] The abovementioned short side of the first lip consequently lies against the surface of the second lip, with the result that the first lip supports the second lip and holds it in place (in other words, at the angle γ with the bearer plate), so that the tilted position of the bearing beam remains secured. Owing to the fact that the bearer plate and the first lip form substantially a right angle, an L-shaped profile is thus formed, in which profile rectangular beams with all current cross-sectional dimensions can be fastened to the bracket, such as beams with a cross section of 7x7 cm, 9x9 cm, 7x9 cm. The same applies to the bearing beam, in the case of which a right angle is likewise present between the second lip and the mirror-image second lip, since two adjacent sides are likewise enclosed, thereby forming an L-shaped profile. It is important that the beams should be sufficiently strong for the envisaged load.

[0037] In another preferred embodiment of the bracket according to the invention, a third lip is formed on the side of the first lip adjoining the side with which the first lip is formed on the bearer plate concerned, which side is situated near the second lip of the bearer plate concerned, and which third lip is substantially perpendicular to the first lip and encloses an angle the size of γ with the bearer plate, the third lip extending substantially in the same plane as the second lip.

[0038] Providing a third lip which is immovably connected to the first lip ensures that sturdy and stable support of the bearing beam is obtained, which means that the turned position of the bearing beam remains better secured. It has also been found that the resistance of the assembly to load in the longitudinal axis of the bearing beam is improved in this way.

[0039] In a special embodiment of the above bracket the third lip, viewed from the side of the first lip, faces away from the second lip. This embodiment of the

bracket is simple to manufacture and, owing to the fact that both the second lip and the first lip (by way of the third lip) are connected to the bearing beam, will provide additional sturdiness of the assembly and increased resistance to load in the longitudinal axis of the bearing beam.

[0040] Since angle γ is generally greater than 90° , in such a case the second lip very advantageously comprises a stop near the first lip, which stop is situated in a plane in which the angle between said plane and the bearer plate is approximately 90° , and the angle between said plane and the first lip is approximately 90° . When a supporting beam is fastened in the L-shaped profile formed by the first lip and the bearer plate, the abovementioned stop rests against the head end of the abovementioned supporting beam, with the result that the second lip is fixed and rotation of the bearing beam about the longitudinal axis thereof is prevented. The stop advantageously comprises a stop face, the entire surface of which can interact with the head end of a supporting beam. Here again, the term 'near' means that the distance between the first lip and the stop is at most the width of the envisaged supporting beam to be fastened. The distance is preferably at most the distance between the two opposite long sides of the first lip.

[0041] The invention also comprises a bracket, intended for fastening rigidly to each other the bearing beam and the supporting beams of one of the inverted V-shaped supports of an assembly according to the invention.

[0042] With this bracket it is simple for a "Do-it-yourself" person to produce an assembly according to the invention safely, easily and quickly without complicated fastenings.

[0043] The invention also comprises a support half of a bracket according to the invention.

[0044] Constructing the bracket from two support halves means that it is also possible to fasten the support halves to the bearing beam separately from each other, so that it is possible, inter alia, to position the engagement of the support accurately relative to the longitudinal axis of the bearing beam, and the bracket can be packed and delivered in compact form.

[0045] In addition, the invention comprises a kit for producing an assembly according to the invention, at least comprising:

- two fastening brackets according to the invention, each for fastening together two of the legs of the support-forming supporting beams and the bearing beam, and
- a swing and/or other item of children's play equipment to be suspended from the bearing beam.

[0046] With this kit the user can produce an assembly according to the invention in a simple manner, without needing to have specific knowledge of

constructions. In addition, said kit is cheap and flexible as regards the required size of the assembly. The user himself determines the dimensions of the assembly by himself procuring the beams for the supports and the bearing beam. This means that the user can adapt the final dimensions of the assembly to the ground area it will take up and the available space on/in which the assembly is to be placed.

[0047] It is also possible for the kit to comprise a bearing beam and four beams for the legs of two inverted V-shaped supports. This kit is complete, and the consumer can immediately commence the construction of the assembly with it.

[0048] In addition, the invention relates to an assembly at least comprising a fastening bracket according to the invention.

[0049] The invention will be explained in further detail below with reference to the appended drawing, in which:

Fig. 1 shows a perspective elevational view of an assembly according to the invention;

Fig. 2 shows a vertical cross section through the bearing beam of Fig. 1;

Fig. 3 shows a perspective elevational view of a fastening bracket for use in an assembly according to the invention;

Fig. 4 shows a perspective elevational view of a support half for a fastening bracket for an assembly according to the invention;

Fig. 5 shows a perspective elevational view of a second embodiment of a fastening bracket for an assembly according to the invention;

Fig. 6 shows a perspective elevational view of a fastening bracket for fastening an additional supporting beam to the bearing beam of an assembly according to the invention;

Fig. 7 shows a perspective side view of a fastening bracket according to the invention;

Fig. 8 shows a perspective side view of another embodiment of the fastening bracket.

[0050] In Fig. 1 an assembly to which children's play equipment is to be suspended is indicated by 1. The assembly comprises a bearing beam 2, which is supported by four legs 3, which are connected to the bearing beam 2 at the position of 4 and 5. Reference numeral 6 indicates a connecting beam, which connects two legs 3 of the inverted V-shaped supports to each other, in order to obtain a sturdy and shape-retaining support. The items of children's play equipment fastened to the bearing beam 2 are a swing 7 and a high bar 8, which are fastened by means of ropes 10 and suitable fastening means 9 to the bearing beam 2. The legs 3 rest with their ends 11 on a ground surface (not shown). Said ground surface corresponds to the plane through the four ends 11 of the legs 3. In general, this is a straight plane and in practice will be a grass field, play-

ground or, for example, a sand area. Reference numeral 12 indicates one end of the bearing beam, which in this case is the same as the vertical cross section through the bearing beam 2, which runs through the plane perpendicular to the ground surface and in this case substantially perpendicular to the longitudinal axis of the bearing beam 2.

[0051] Since the bearing beam 2 has a rectangular cross section instead of a round one, such a beam, unlike a round bearing beam, does not have to have a core, so that the cuff-shaped fastening means 9 can very advantageously be replaced by simple hooks which can be screwed into the bearing beam.

[0052] Fig. 2 shows a vertical cross section through the end 12 of the bearing beam 2. The cross section may, however, be selected at any desired point through the bearing beam 2, without any change occurring.

[0053] In the cross section 12 corner point 50 is the point of the cross section 12 of the bearing beam 2 which is furthest away from the ground surface. Corner point 50 is formed by the corner point between two longitudinal sides 51, 52 of the bearing beam 2 and is the point of the cross section which is at the maximum distance from the ground surface. The angle formed by the longitudinal sides 51 and 52 is indicated by ω .

[0054] H indicates the plane which runs parallel to the ground surface through corner point 50. Angles χ and χ' indicate the angles between plane H and longitudinal sides 51 and 52 respectively. In the case illustrated χ and χ' are equal and are 45° .

[0055] Reference numeral 50' indicates the corner point which is furthest away from the corner point 50. The imaginary line through 50 and 50' is substantially perpendicular to the ground surface (not shown). Since the cross section 12 is rectangular (square), the maximum distance in the cross section 12 is achieved by the distance between 50 and 50'.

[0056] Fig. 3 shows a fastening bracket 20 according to the invention, in this case for fastening legs 3 to bearing beam 2. Fastening bracket 20 is composed of two support halves 21 and 21', connected to each other, of which support half 21 is shown in greater detail in Fig. 4. Corresponding parts of the two support halves will therefore be indicated accordingly here as 21 and 21', 35 and 35' etc.

[0057] With reference to Figs. 3 and 4, support half 21 comprises a bearer plate 30 with a first side 31 and a second side 32 which enclose a right angle in the plane of the bearer plate 30. A first lip 33 is moulded onto the first side 31, which lip is at an angle β of approximately 90° to the bearer plate 30. Bearer plate 30 and first lip 33 are provided with openings 34 for the accommodation therein of fastening means for fastening a first leg 3 of the support of the assembly 1. Said fastening means can be screws, nails or other means which are known in the field. During use, a rib of leg 3 will be substantially parallel to the first side 31 of the support half, and two adjoining sides of leg 3 will rest on

the bearer plate 30 and the first lip 33 and extend downwards in the plane of drawing. The other end of leg 3 will extend substantially to the second side 32 of bearer plate 30.

[0058] A second lip 35 is moulded on at the position of the second side 32 of the bearer plate 30. Said lip 35 is at an angle γ (here 105°) to the bearer plate 30. The second lip 35 is supported in this position by a second side 55 of the first lip 33. To that end, the angle between said side 55 and the edge 31 is likewise 105° in this case. This means that if the legs of the support form an angle α of 60° , the bearing beam can be accommodated at angles χ , χ' of 45° (see Fig. 2). The second lip 35 rests against the abovementioned side 55 of the first lip 33 and is well supported by it, with the result that the rotated position of the bearing beam 2 is secured.

[0059] The second lip 35 is likewise provided with openings 36, for the accommodation therein of fastening means which can connect the second lip 35 to a surface of the bearing beam 2 at the position 4, 5 of Fig. 1. Of course, the fastening bracket 20 is not restricted to connecting the bearing beam 2 at the position 4, 5 of Fig. 1, but said bracket can be placed at any desired position and connected to the bearing beam 2.

[0060] In both mirror-symmetrical support halves 21 and 21' connecting lips 23, 24 are formed from the bearer plates 30, 30' thereof, which connecting lips are folded over and connected to each other. To this end, the connecting lips 23 and 24 are provided with openings 25 for the accommodation therein of, for example, a nut and bolt connection. The two support halves 21, 21' rest with their second sides 32 and 32' against each other, although they can also run parallel to each other at a distance from each other. The angle α at which the two support halves are fastened relative to each other is determined by the angle between which the legs of the supports are to stand. In this case α is 60° . The second lip 35 can interact with the mirror-image second lip 35', and these two are situated in such a way relative to the bearer plate 30, 30' respectively that the angle δ formed corresponds to the angle enclosed by the bearing beam 2 (here 90°).

[0061] Fig. 5 shows a support half of another embodiment of the bracket according to Fig. 4. Corresponding parts will therefore be indicated here by the same reference numerals. Like the bracket in Fig. 3, the bracket in this case comprises the support half 71 in Fig. 5 and support half 71' (not shown) which is mirror symmetrical thereto, which support halves are placed relative to each other in a manner similar to that according to Figs. 3 and 4, in this case to be connected to each other by way of connecting lips 73, 74, which are formed from a bearer plate 70 and comprise apertures 75 for a nut and bolt fastening.

[0062] Like the support half 21 from Fig. 4, the support half 71 from Fig. 5 comprises a bearer plate 70, a first lip 73 and a second lip 75, the second lip 75 enclosing an angle γ relative to the bearer plate 70, and the

first lip enclosing an angle β (as in Figs. 3 and 4) with the bearer plate 70. At the position of the second side 55 of the first lip, a third lip 56 is moulded onto the first lip, which third lip is substantially perpendicular to the first lip and forms an angle the size of γ with the bearer plate 30. The third lip 56 thus lies in the same plane as the second lip 35. The third lip 56 can interact with the mirror image third lip 56' of the second support half 71' (not shown) and, like the second lip 35 and the mirror image second lip 35', in this way forms an opening for the accommodation therein of the bearing beam 2. The third lips 56, 56' here likewise enclose the angle δ (see Fig. 3), which preferably corresponds to 90° .

[0063] Angle ϵ between the first side 31 and the second side 32 of the bearer plate is 90° in the case shown.

[0064] Bearer plate 70 in Fig. 5 is provided with a slanting side 57, in which the material is partially folded over (folded edge). This embodiment of the bearer plate 70 provides additional rigidity of the bearer plate 70, which as a whole improves the rigidity of the assembly 1.

[0065] Fig. 6 shows an embodiment of an additional "truncated" support half 61, for fastening an additional supporting beam to the bearing beam 2. This bracket corresponds to the part of the support half 71 shown in Fig. 5 to the left of the dotted line A-A. Corresponding parts are therefore indicated by the same reference numerals. The second side 55 of the first lip forms an angle γ with the first side 31 of the bearer plate 60. With a suitable selection of the angle γ , a first supporting beam of an inverted V-shaped support can be assembled in a simple manner, for example halfway along the bearing beam 2 of the assembly 1 (see Fig. 1), for example by means of a screw fastening through the apertures 36 of the third lip 56 on the bearing beam 2.

[0066] The second supporting beam for the inverted V-shaped support can be fastened on the bearing beam 2 opposite the abovementioned first supporting beam by means of a bracket of a mirror symmetrical design.

[0067] The placing of additional supports is an advantage if a heavy load is being exerted on the assembly 1, for example if it is also serving to accommodate a slide or other item of children's play equipment. The abovementioned truncated brackets 61 can be offered in a simple manner in a kit for producing such an assembly 1.

[0068] In Fig. 7 a planar stop 60, 60' is formed on second lips 35 and 35' respectively. The angle between stop face 60 and bearer plate 30 is 90° . When a bearing beam is fastened in the L-profile defined by bearer plate 30 and first lip 33, the head end of the bearer beam abuts face 60, with the result that sufficient rigidity between second lip 35 and bearer plate 30 is ensured.

[0069] The angle between stop face 60 and the first lip is likewise 90° . For additional rigidity between the second lip 35 and the bearer face 30, three reinforce-

ment elements 61 are moulded on in the support half at the position of edge 32.

[0070] In Fig. 8 the angle between first lip 33 and second lip 35 is approximately 100° , which in this perspective elevational view is not, however, easy to see. The angle between stop face 60 and first lip 33 in this case is likewise 90° , while the angle between the stop face and bearer plate 30 is also 90° .

[0071] For the production of the assembly 1, two legs 3 are first sawn to the correct, equal length, after which said legs (in Fig. 3) are fastened in the angle between lip 33 and bearer plate 30 and lip 33' and bearer plate 30' respectively of the support halves 21 and 21' of the bracket. Two corresponding legs 3 are fastened in a corresponding manner in a second bracket, on the other side of the assembly. After that, the two support halves can be connected to each other by means of the connecting lips 23, 24 and 23', 24' respectively, after which the bearing beam 2 is placed and connected at the position of the angle-shaped profile 41, formed by the lips 35 and 35'. This is also carried out in a corresponding manner on the other side of the bearing beam.

[0072] For reinforcement, two intermediate beams 6 may, if desired, be fitted between the legs 3 of the supports of the assembly 1, after which the ends 11 of the legs can be anchored on the ground surface, for example by means of digging the ends 11 into the ground surface. By means of suspension means 9, the swing 7 and the high bar 8 are suspended from the bearing beam 2, after which the assembly is ready for use.

[0073] Other sequences for connecting and fastening are also possible.

Claims

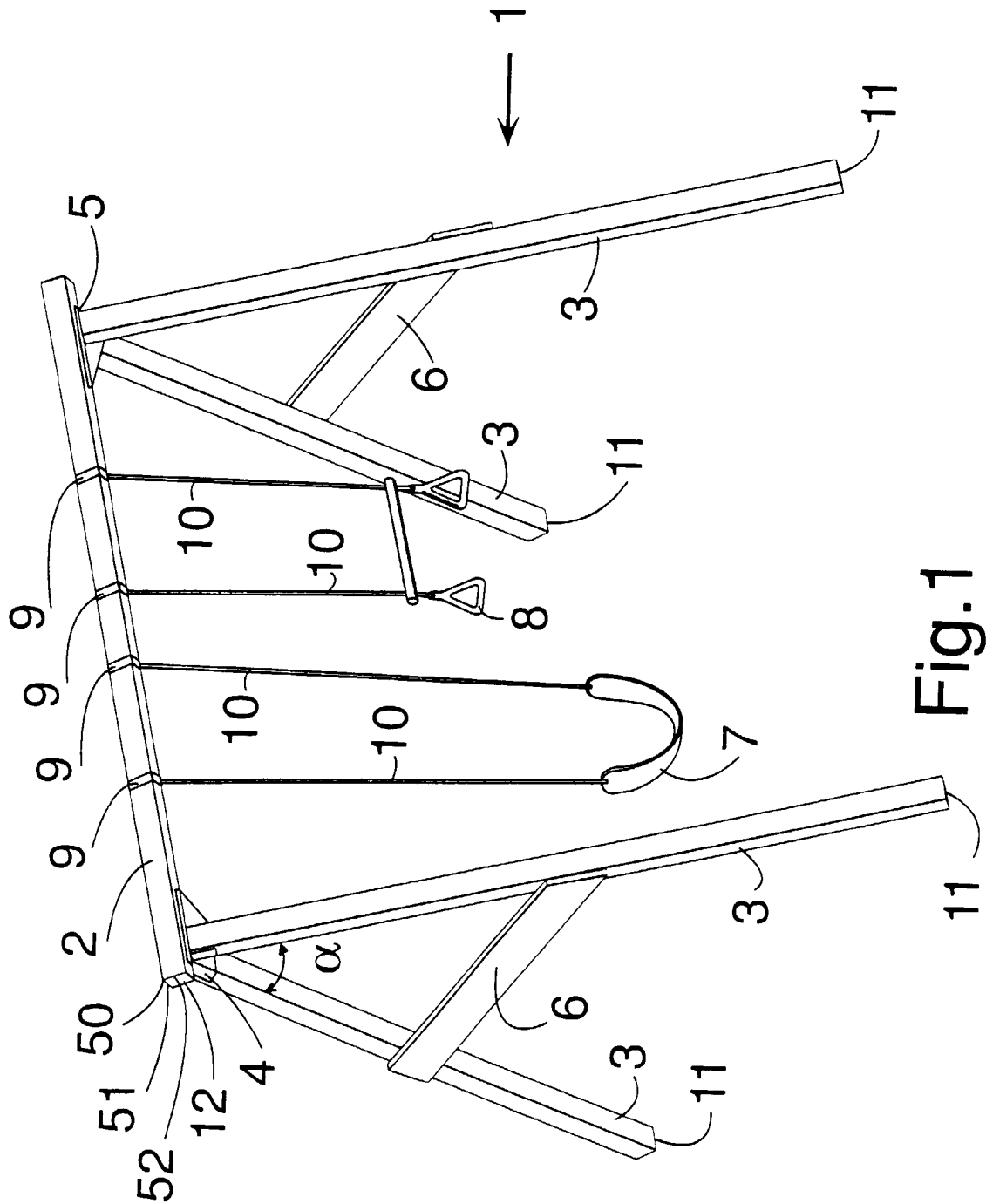
1. Assembly (1), at least comprising:

- a bearing beam (2) with a rectangular cross section,
- a swing (7) or other item of children's play equipment (8) suspended from a bearing beam (2),
- two supports for supporting the bearing beam (2) near its ends (4, 5) at a distance from a ground surface, characterized in that the bearing beam (2) is positioned in such a way that in a vertical cross section (12) through the bearing beam (2) the point (50) of the bearing beam (2) furthest away from the ground surface is formed by one corner point (50) of said cross section (12) which is enclosed by two longitudinal sides (51, 52) of the bearing beam (2).

2. Assembly according to claim 1, characterized in that the line through two points furthest away from each other in the vertical cross section (12) through the bearing beam (2) run substantially perpendicu-

lar to the ground surface.

3. Assembly according to claim 3, characterized in that the bearing beam (2) has a square cross section (12). 5
4. Assembly according to one or more of the preceding claims, characterized in that at least one of the supports is in the form of an inverted V, and the bearing beam (2) is connected to the support near the point of intersection of the legs (3) of the support. 10
5. Assembly according to one or more of the preceding claims, characterized in that the legs (3) of the supports and the bearing beam (2) are made of the same material with substantially the same cross section (12). 15
6. Fastening bracket (20) for fastening together at an acute angle α a first and a second beam (3) near the ends of said beams (3) and a third beam (2), near the abovementioned corner point, the third beam (2) running at an angle ε through the plane through the first and second beams (3), characterized in that said fastening bracket at least comprises: two substantially mirror-symmetrical support halves (21, 21'), each support half comprising a bearer plate (30, 30') with a first side (31, 31') and an adjoining second side (32, 32'), which sides enclose angle ε , while the bearer plates (30, 30') are connected to each other in such a way that they enclose angle α , and the second sides (32, 32') of the bearer plates (30, 30') run parallel to each other, and onto which first side (31) first lip (33) is formed at an angle β of approximately 90° , thereby forming a profile which is L-shaped in cross section, for rigid fastening against said profile of the first or the second beam (3), onto which second side (32) a second lip (35) is formed, at an angle γ of at least 90° between the second lip (35) and the bearer plate (30), in such a way that substantially a right angle δ is formed between the second lip (35) of the first bearer plate (30) and the second lip (35') of the second bearer plate (30'), said second lips (35, 35') forming a second profile which is L-shaped in cross section, for rigid fastening of the third beam (2) against said second profile. 20 25 30 35 40 45
7. Bracket, characterized in that angle ε lies between 90° and 110° . 50
8. Bracket according to claim 12, characterized in that the second side (32) of the first support half (21) rests against the second side (32') of the second support half (21'). 55
9. Bracket according to one of claims 12-14, characterized in that the side (55) of the first lip (33) adjoining the side (31) with which the first lip (33) is formed on the bearer plate (30) concerned, which side is situated near the second lip (35) of the bearer plate (30) concerned, encloses an angle the size of γ with said side (31), with which the first lip (35) is formed on the bearer plate (30).
10. Fastening bracket according to one or more of claims 6-9, characterized in that the second lip comprises a stop near the first lip, which stop is situated in a plane in which the angle between said plane and the bearer plate is approximately 90° , and the angle between said plane and the first lip is approximately 90° .
11. Support half of a bracket (20) according to one of claims 6-10.
12. Kit for producing an assembly (1) according to claim 4 or 5, at least comprising:
 - two fastening brackets (20) according to one of claims 6-11, each for fastening together two of the legs (3) of the support-forming supporting beams and the bearing beam (2), and
 - a swing (7) and/or other item of children's play equipment (8) to be suspended from the bearing beam.
13. Assembly according to one of claims 1-5, characterized in that it comprises at least a bracket (20) according to one of claims 6-10.



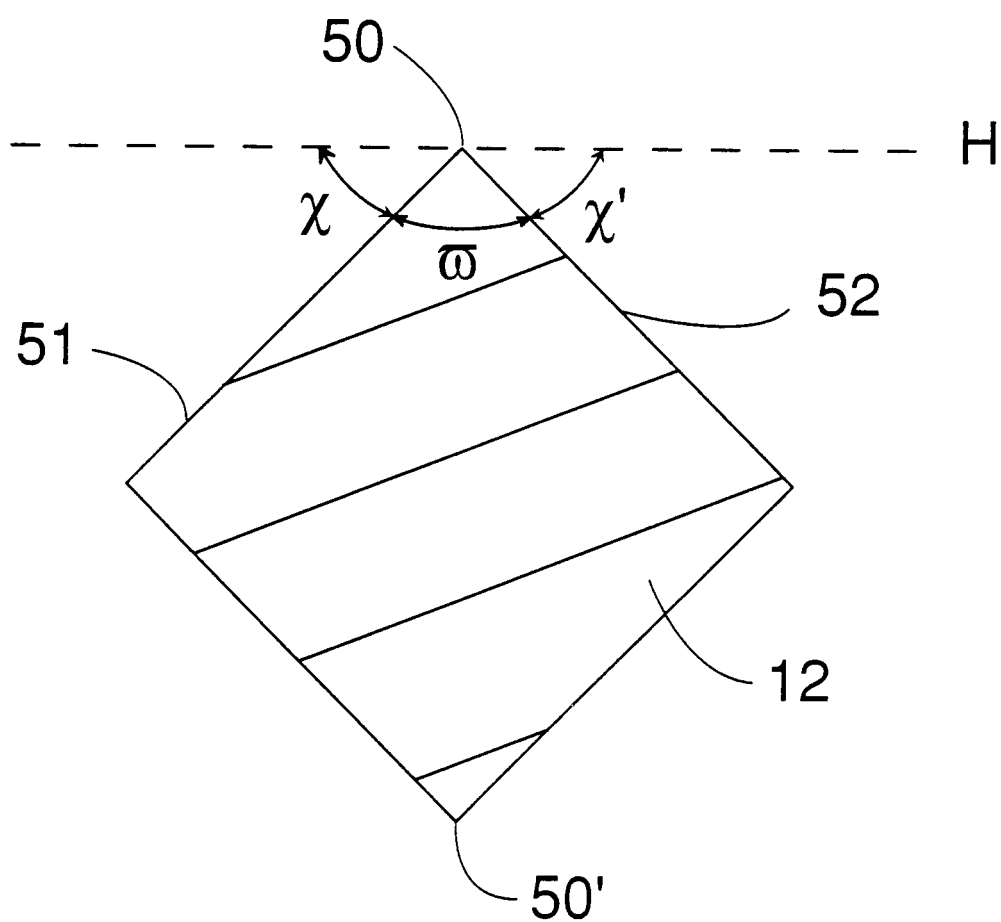


Fig. 2

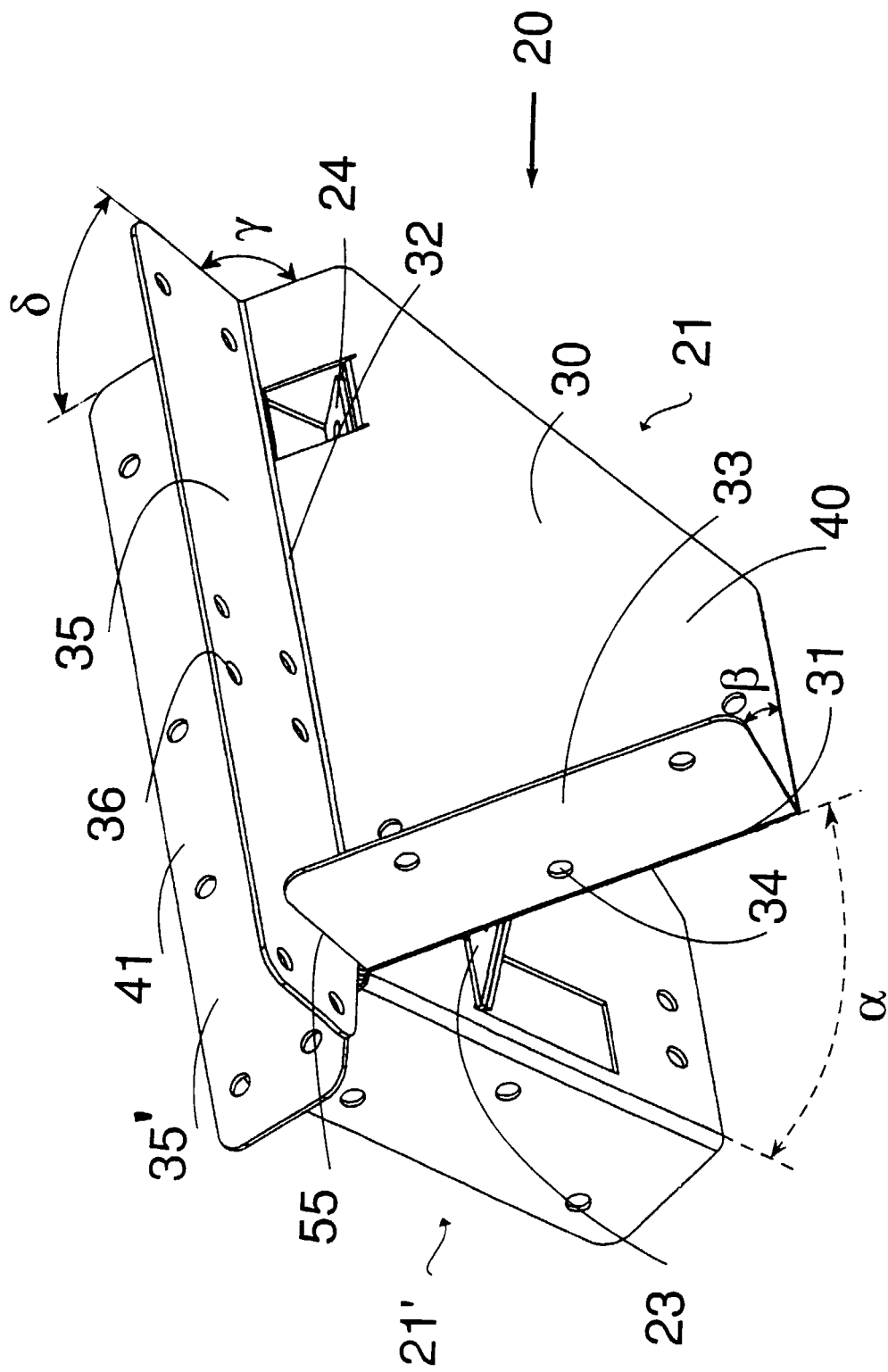


Fig. 3

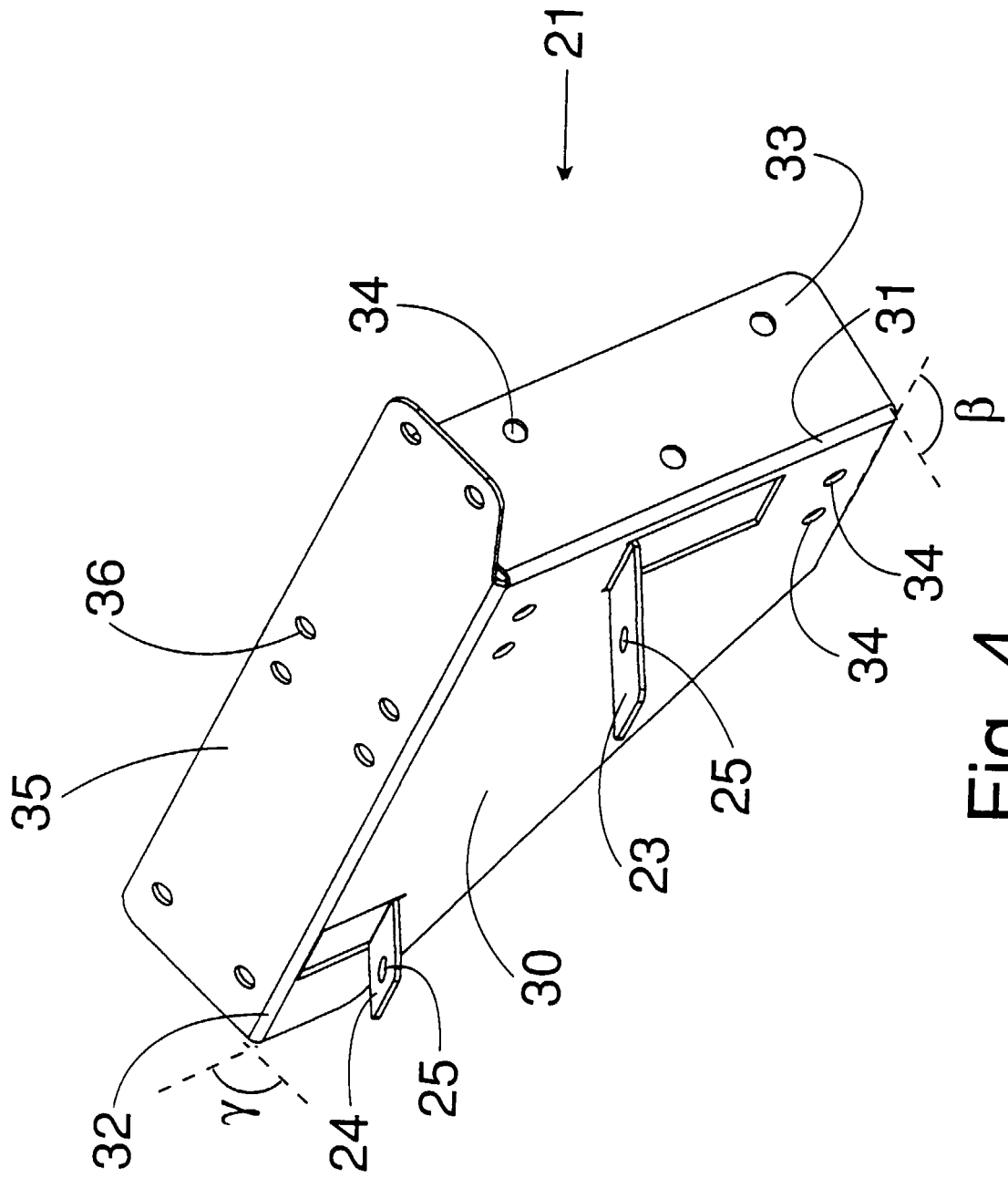


Fig. 4

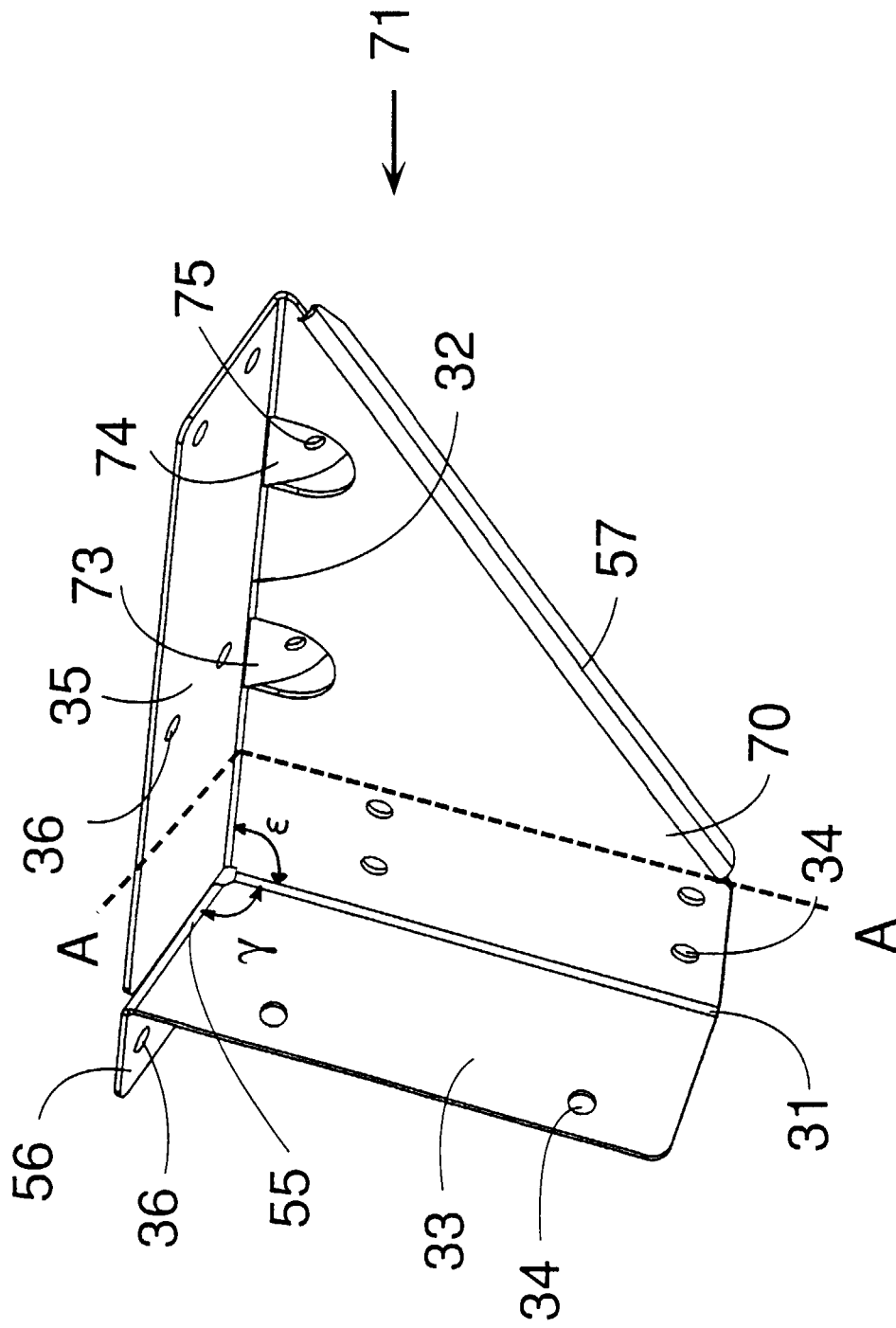


Fig. 5

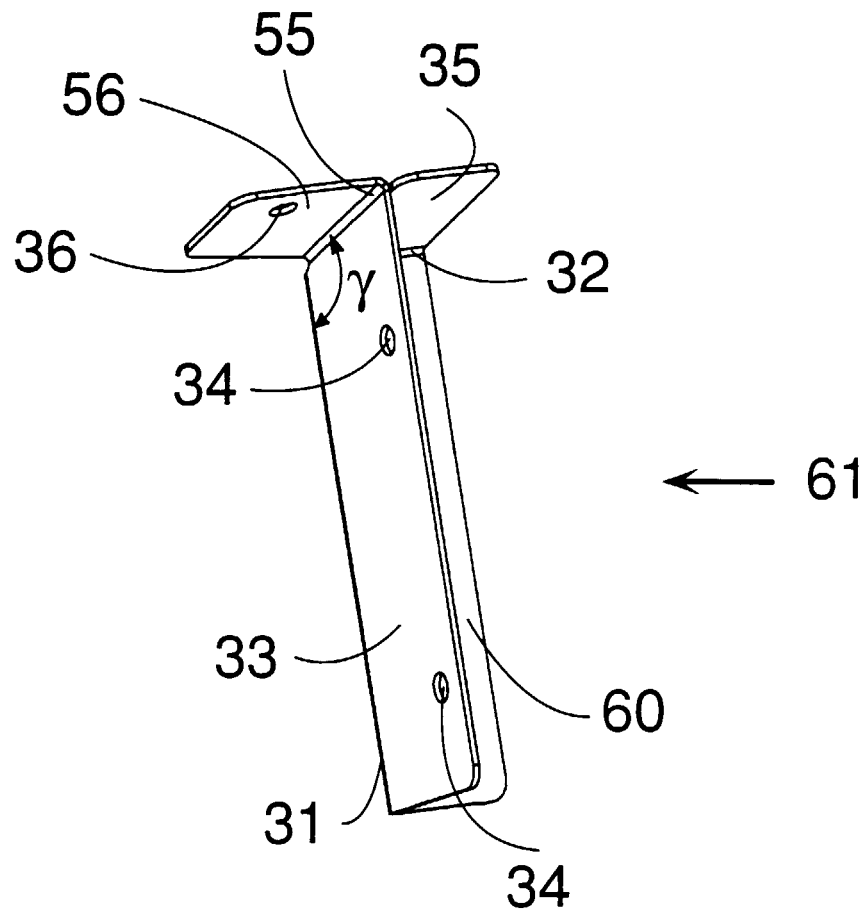


Fig. 6

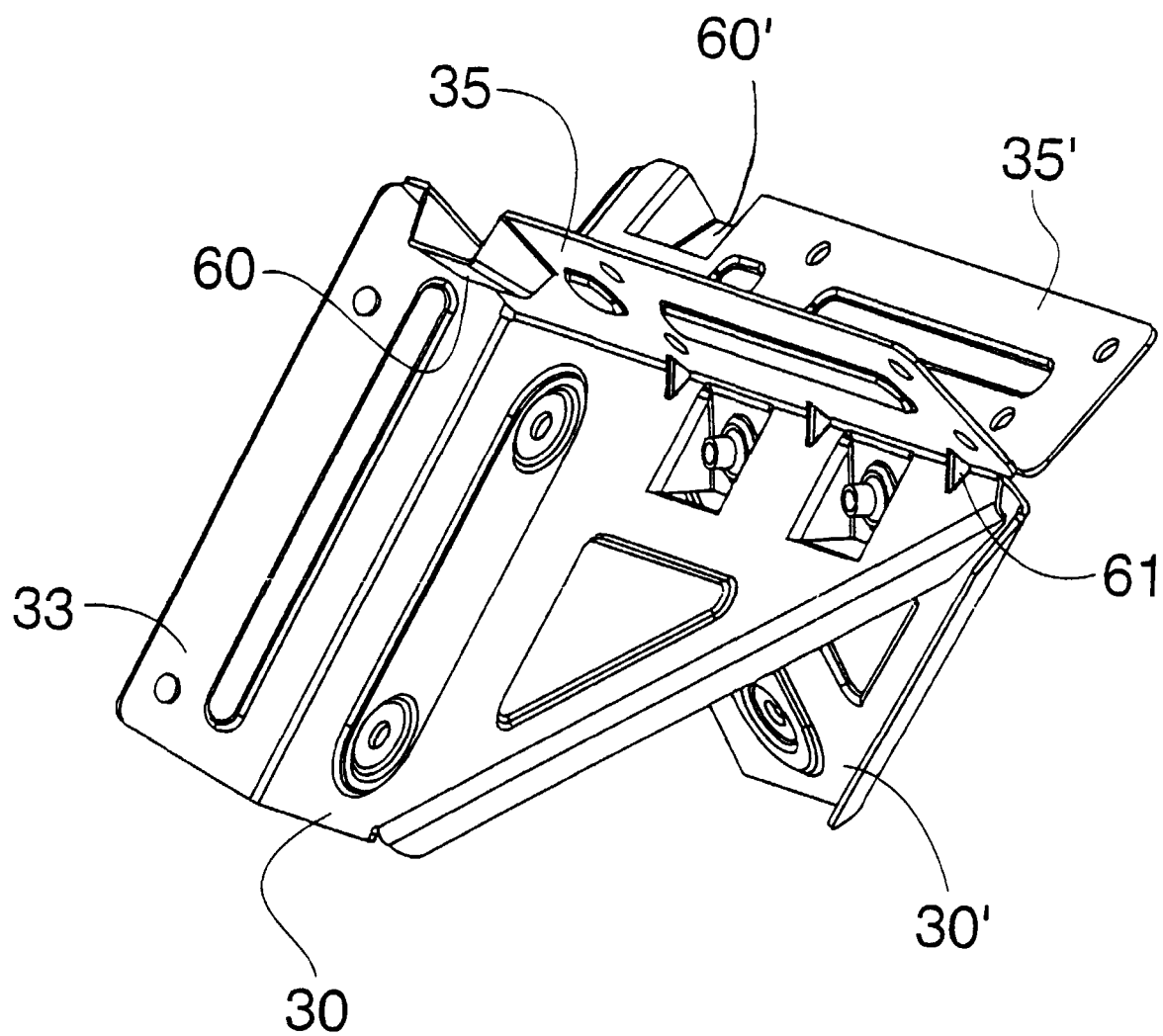


Fig. 7

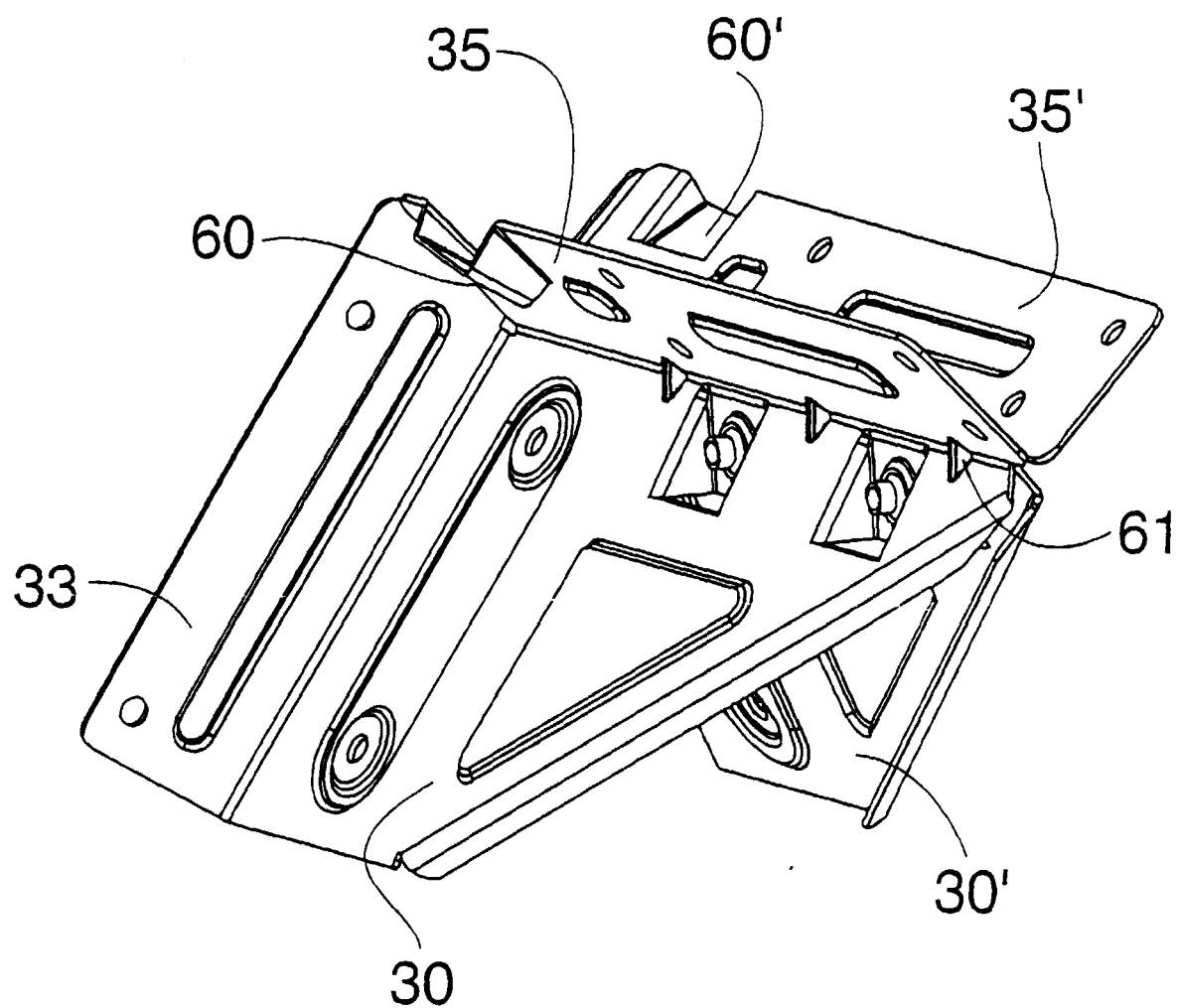


Fig. 8



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EUROPEAN SEARCH REPORT

Application Number
EP 99 20 3764

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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A63G E04B A63B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 February 2000	Examiner Godot, T
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			

EPO FORM 1503 03 82 (P04C01)

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14-02-2000

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