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

(11) EP 3 072 566 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
28.09.2016 Bulletin 2016/39

(51) Int Cl.:
A63G 21/02 *(2006.01)*

(21) Application number: **16250005.2**

(22) Date of filing: **11.03.2016**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(30) Priority: **13.03.2015 GB 201504306**

(71) Applicant: **Garden Games Limited**
Near Abingdon, Oxford OX13 5PD (GB)

(72) Inventor: **CARDY, John**
Oxford OX 13 5PD (GB)

(74) Representative: **Sayer, Robert David**
Agile IP LLP
Airport House
Purley Way
Croydon, Surrey CR0 0XZ (GB)

(54) A SLIDE ASSEMBLY

(57) A slide assembly is disclosed, comprising an upper section, a middle section and a lower section. Each section has an upper sliding surface, a lower surface and lateral side walls, the middle section having end walls for abutting a respective end wall of the upper section and the lower section. The end walls of the middle section have an inwardly-converging profile from the upper surface to the lower surface to provide an overall wedge-shaped profile when viewed side-on, said end wall profiles corresponding with the abutting surface of the upper and lower sections so that the middle section can be supported between the upper and lower sections without the need for its own ground support. The middle section further comprises means to interlock at each end with the other sections by means of a transverse bar that extends through a groove or channel underneath.

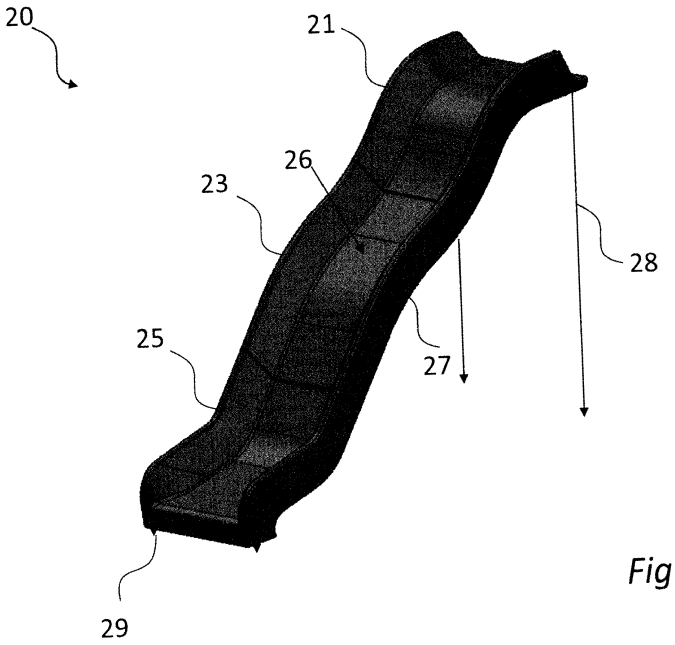

Fig. 2

EP 3 072 566 A1

Description

Field of the Invention

[0001] This invention relates to a slide assembly, particularly one formed of multiple parts for assembly at the point of use.

Background of the Invention

[0002] A slide is a well-known playground or garden fixture comprising of a metal, wooden or plastic inclined member with a smooth upper surface so that a user can slide down the surface. The surface may be straight or curved or wavy, and may be supported at its upper end by a fixture such as a ladder, climbing frame or playhouse.

[0003] In some countries, a slide is known as a playground chute, sliding pond or pon.

[0004] Due to the relatively large size and shape of a slide, it is difficult to transport and will occupy a large amount of space in a van or truck, which is inefficient. Although modular slides, i.e. slides that are provided in sections for assembly at their point of use, are known, because of the safety aspect which requires that the slide will not fail when used, these known slides tend to rely on complex connection mechanisms, which may ultimately fail over time, and may require expert assembly at the point of use.

[0005] It is an aim to provide an improved slide assembly.

Summary of the Invention

[0006] A first aspect of the invention provides a slide assembly, comprising: first, second and third sections which detachably connect together, each section having an upper and lower surface and side walls, the third section being arranged to locate between the first and second sections by means of first and second end walls, which are generally transverse to the side walls and have an external surface the majority of which has a profile which extends inwardly from the upper surface to the lower surface to provide generally an overall wedge shape when the third section is viewed side-on, an end wall of each of the first and second sections being formed with a correspondingly-shaped surface so that, in use, the end walls of the third section abut said end walls of the first and second sections such that the third section can be supported above ground between the first and second sections without the need for its own ground support.

[0007] The supporting of the third section between the first and second sections is in the manner of a 'keystone' by virtue of its shape and the corresponding shape of the walls it abuts at each end. This means that the slide can be broken down into at least three sections, providing a transportable product that can be compact, and when assembled the third section has strong support without the need for its own ground support. If additional engagement portions are provided between adjacent sections, the wedge shape minimises, or at least reduces, the downwards forces imposed on said portions to improve lifespan of the product.

[0008] The end walls of the third section may have a flat, inwardly tapering profile. These may be identical at both ends.

[0009] The inwardly tapering profiles of the end walls may be angled so that they have a converging angle of between 15 and 20 degrees, e.g. 18 degrees, substantially.

[0010] The first and second sections may be arranged to be in fixed relation to an underlying surface, e.g. the ground.

[0011] When assembled, the first section may be the upper section, the third section the middle section and the second section the lower section, and the upper end wall of the first section may further comprise means for attachment to a ladder, climbing frame or playhouse structure.

[0012] The second section may further comprise means for anchoring it to an underlying surface, e.g. the ground.

[0013] The abutting end walls may further be arranged with interlocking means, e.g. beneath the upper surface, to provide additional support.

[0014] The interlocking means may comprise, on one of the abutting end walls, a plurality of fingers extending from, or from the region of, said end wall, each arranged to locate within a corresponding groove or channel provided in, or in the region of, the other end wall with which it is to abut.

[0015] The plurality of fingers on, or in the region of, each said end wall may each comprise a transverse groove or channel at a predetermined distance along the finger configured in use to receive a bar which extends through said transverse grooves or channels.

[0016] Said other wall may comprise a transverse channel through which the bar passes.

[0017] A second aspect of the invention provides a slide assembly, comprising: an upper section, a middle section and a lower section, each having an upper sliding surface, a lower surface and lateral side walls, the middle section having end walls for abutting a respective end wall of the upper section and the lower section, said end walls of the middle section having an inwardly-converging profile from the upper surface to the lower surface to provide an overall generally wedge-shaped profile when viewed side-on, said end wall profiles corresponding with the abutting surface of the upper and lower sections so that the middle section can be supported between the upper and lower sections without the need for its own ground support, the middle section further comprising means to interlock at or in the region of each end wall with the other sections by means of a transverse bar that extends through a groove or channel underneath the up-

per sliding surface.

Brief Description of the Drawings

[0018] The invention will now be described, by way of non-limiting example, with reference to the accompanying drawings, in which:

Figure 1 is a partial schematic view of a slide assembly, comprising upper, lower and a middle sections, in accordance with the invention;
Figure 2 is a perspective view of a first embodiment slide assembly according to the invention, when assembled;
Figure 3 is a side view of the Figure 2 slide assembly;
Figure 4 is an exploded perspective view of the Figure 2 slide assembly;
Figure 5 is a close-up, underside view of engagement portions between the upper and middle sections of the Figure 2 slide assembly, prior to assembly;
Figure 6 is a close-up, underside view of the Figure 5 engagement portions, when assembled; and
Figure 7 is a cross-sectional view of the engagement portions between the lower and middle sections, when assembled.

Detailed Description of Preferred Embodiments

[0019] The preferred embodiment disclosed herein provides a slide assembly suitable for use in a garden or playground. The assembly can be provided in disassembled form, making it easily and efficiently transportable from factory/distributor to place of use, where it can be safely and easily assembled. The slide assembly comprises three separate slide sections, namely an upper, lower and middle section, which means that the sections can be compactly stored and transported, e.g. in nested form.

[0020] The middle section is generally wedge-shaped (when viewed in cross-section or from the side) and supported when assembled by the adjacent sections in the manner of a bridge or arch 'key stone' so that it requires no ground support of its own and is sturdy and stable when assembled between the two fixed outer sections.

[0021] Referring to Figure 1, which is useful for understanding the general principle, there is shown in cross-section part of an upper section 1, part of a lower section 3 and a middle section 5 in assembled form. Each section 1, 3, 5 has a smooth upper sliding surface 7, a lower surface 9 and generally transverse end walls 11, 13, 15, 17. Only the end walls of the lower and upper sections, that abut the middle section, are shown. In practise, there are also provided lateral side walls upstanding from the upper surface 7 to prevent a user from falling sideways from the slide.

[0022] It will be seen that the end walls 11, 13 of the middle section 5 taper inwardly from the upper to lower surfaces 5, 9, i.e. they converge towards a distant point, indicated by dotted lines with a convergence angle α.

[0023] The overall side profile of the middle section 5 is therefore that of a wedge. The abutting surfaces 15, 17 of the lower and upper sections 1, 3 are correspondingly shaped. Provided the lower and upper sections 1, 3 are mounted in fixed relation to the ground, then the middle section 5 will remain supported as shown without the need for its own ground support. The stability is improved by virtue of the fact that the majority of the end wall surfaces are tapered in this way, making the assembly strong and less likely to fail. The end wall surfaces are substantially planar and have the same, but oppositely oriented, taper.

[0024] Referring now to Figure 2, a first embodiment slide assembly 20 (hereafter "slide") is shown in assembled form. The slide 20 employs the Figure 1 keystone principle, employing in this case a convergence angle α of approximately 18 degrees. The slide 20 comprises an upper section 21, a middle section 23 and a lower section 25. The upper sliding surface is indicated generally by reference numeral 26, and the upstanding lateral walls by reference numeral 27.

[0025] Each section 21, 23, 25 is in this case curved, but each can be planar. The upper and lower sections 21, 25 are provided with means to secure said sections in fixed relation to the ground, indicated by arrows 28, 29. In the case of the upper section 21, this may be by means of a ladder or attachment to a playhouse or climbing frame, for example. In the case of the lower section 25, this may be any suitable anchoring means, e.g. posts or spikes that embed into the ground.

[0026] Figure 3 shows the Figure 2 embodiment in side view, where the converging end walls 31, 33 of the middle section 23 abut adjacent walls 35, 37 of the upper and lower sections 21, 25 having a surface profile the majority of which corresponds to the adjacent wall they abut, i.e. in the manner shown in Figure 1. The separate sections 21, 23, 25 by virtue of their dimensions and shape can be provided disassembled, nested and easily transported for assembly.

[0027] In theory, provided the upper and lower sections 21, 25 are securely fixed, the middle section 23 will support the weight of users. However, for further safety, the embodiment also provides interlocking connecting means, to be described below.

[0028] Figure 3 also provides typical dimensions, which may of course vary. The width of the Figure 3 slide is 570 mm.

[0029] Referring to Figure 4, the upper, middle and lower sections 21, 23, 25 are shown in exploded view. It will be seen that interlocking means are provided between adjacent sections, in the form of fingers 40, 42 which project from the upper and lower sections 21, 25 and channels 44, 46 formed in the middle section 23, specifically within part of the tapering end walls 31, 33. The fingers/channels may be arranged the opposite way around, i.e. fingers on the middle section 23 and channels

on the upper and lower sections 21, 25.

[0030] Figure 5 shows the interlocking means in more detail, specifically from the underside between the upper section 21 and the middle section 23.

[0031] The upper section 21 has on its underside a central, reinforced portion 50; on either side of this portion extend a pair of fingers 51 (hereafter "overhanging fingers") with part-cylindrical grooves 53 transverse along axis X-X. A pair of further fingers 55 (hereafter "underhanging fingers") extend in the same direction, nearer to the side walls.

[0032] The middle section 23 has on its underside a central, reinforced portion 56; on either side of this portion are provided a pair of grooves or recesses 59 shaped and dimensioned so as to receive the overhanging fingers 51 in a close-fitting manner. A transverse cylindrical channel 61 extends through the reinforced portion 56 and is aligned with the grooves 53 which locate either side of said portion when the two sections 21, 23 are connected. A pair of further grooves or recesses 57 are provided on the underside, nearer to the side walls, shaped and dimensioned to receive the underhanging fingers 55 in a close-fitting manner, when the sections 21, 23 are connected.

[0033] As indicated in Figure 5, the cylindrical bar 48, which is preferably metal, is threaded through the aligned grooves 53 and the transverse channel 61, to secure the interlocking engagement. Figure 6 shows said bar 48 in final position when the upper and middle sections 21, 23 are interconnected. The diameter of the bar 48 is such as to closely conform with that of the grooves 53 and channel 61 so that it can slide easily within, but is close-fitting such that it will not easily be freed without user effort.

[0034] The same or a similar interlocking means 42, 46 is/are provided between the lower and middle sections 25, 23.

[0035] As shown in Figure 7, which indicates the engagement between the lower and middle sections 23, 25, the overhanging fingers 51 may be shaped on their upper sides (not-visible in Figure 5, which is from the underside) with protrusions 70 (or recesses) which mate with correspondingly shaped recesses (or protrusions) on the lower surface of the grooves/recesses 59 into which they locate. The same may also apply to the outer fingers 55. The fingers will therefore act as clips.

[0036] End caps (not shown) may locate over the ends of each bar 48. Screws 65 (see Figure 6) may be used to secure the bar 48 in position within the channel 53.

[0037] The provision of the above-described interlocking means at the join between the sections 21, 23, 25 ensures even greater stability; the keystone wedge shape minimises the downwards forces imposed on the interlocking sections during use, which may otherwise weaken the interlocking means over time. In the event of any part failing, the keystone wedge shape of the middle section 23 will ultimately prevent failure. The interlocking means also prevents unwanted lateral movement, with the plural fingers preventing a possible hinge point.

[0038] Manufacture is straightforward, particularly in the case of plastics materials, in that moulding can provide the sections 21, 23, 25 which are shaped and dimensioned, possibly such that they nest when stored and/or transported. Less secondary manufacturing processes are required as only the two channels 61 need drilling in the middle section 23.

[0039] The above-described embodiment is particularly suited to play slides for use in gardens or playgrounds. The principles and advantages described herein can also be applied to other forms of slide or chute, however.

[0040] It will be appreciated that the above described embodiments are purely illustrative and are not limiting on the scope of the invention. Other variations and modifications will be apparent to persons skilled in the art upon reading the present application.

[0041] Moreover, the disclosure of the present application should be understood to include any novel features or any novel combination of features either explicitly or implicitly disclosed herein or any generalization thereof and during the prosecution of the present application or of any application derived therefrom, new claims may be formulated to cover any such features and/or combination of such features.

Claims

1. A slide assembly, comprising:

first, second and third sections which detachably connect together, each section having an upper and lower surface and side walls, the third section being arranged to locate between the first and second sections by means of first and second end walls, which are generally transverse to the side walls and have an external surface the majority of which has a profile which extends inwardly from the upper surface to the lower surface to provide an overall wedge shape when the third section is viewed side-on, an end wall of each of the first and second sections being formed with a correspondingly-shaped surface so that, in use, the end walls of the third section abut said end walls of the first and second sections such that the third section can be supported above ground between the first and second sections without the need for its own ground support.

2. A slide assembly according to claim 1, wherein the end walls of the third section have a flat, inwardly tapering profile.

3. A slide assembly according to claim 2 or claim 3, wherein the inwardly tapering profiles of the end

walls are angled so that they have a converging angle of between 15 and 20 degrees.

4. A slide assembly according to any preceding claim, wherein the first and second sections are arranged to be in fixed relation to an underlying surface, e.g. the ground.

5. A slide assembly according to claim 4, wherein, when assembled, the first section is the upper section, the third section is the middle section and the second section is the lower section, the upper end wall of the first section further comprising means for attachment to a ladder or playhouse structure.

6. A slide assembly according to claim 4 or claim 5, wherein the second section further comprises means for anchoring it to an underlying surface, e. g. the ground.

7. A slide assembly according to any preceding claim, wherein the abutting end walls are further arranged with interlocking means beneath the upper surface to provide additional support.

8. A slide assembly according to claim 7, wherein the interlocking means comprise, on one of the abutting end walls, a plurality of fingers extending from said end wall, each arranged to locate within a corresponding groove or channel provided in the other end wall with which it is to abut.

9. A slide assembly according to claim 8, wherein the plurality of fingers on each said end wall each comprise a transverse groove or channel at a predetermined distance along the finger configured in use to receive a bar which extends through said transverse grooves or channels.

10. A slide assembly according to claim 9, wherein said other wall comprises a transverse channel through which the bar passes.

11. A slide assembly, comprising:

an upper section, a middle section and a lower section, each having an upper sliding surface, a lower surface and lateral side walls, the middle section having end walls for abutting a respective end wall of the upper section and the lower section, said end walls of the middle section having an inwardly-converging profile from the upper surface to the lower surface to provide an overall wedge-shaped profile when viewed side-on, said end wall profiles corresponding with the abutting surface of the upper and lower sections so that the middle section can be supported between the upper and lower sections without the need for its own ground support, the middle section further comprising means to interlock at each end with the other sections by means of a transverse bar that extends through a groove or channel underneath.

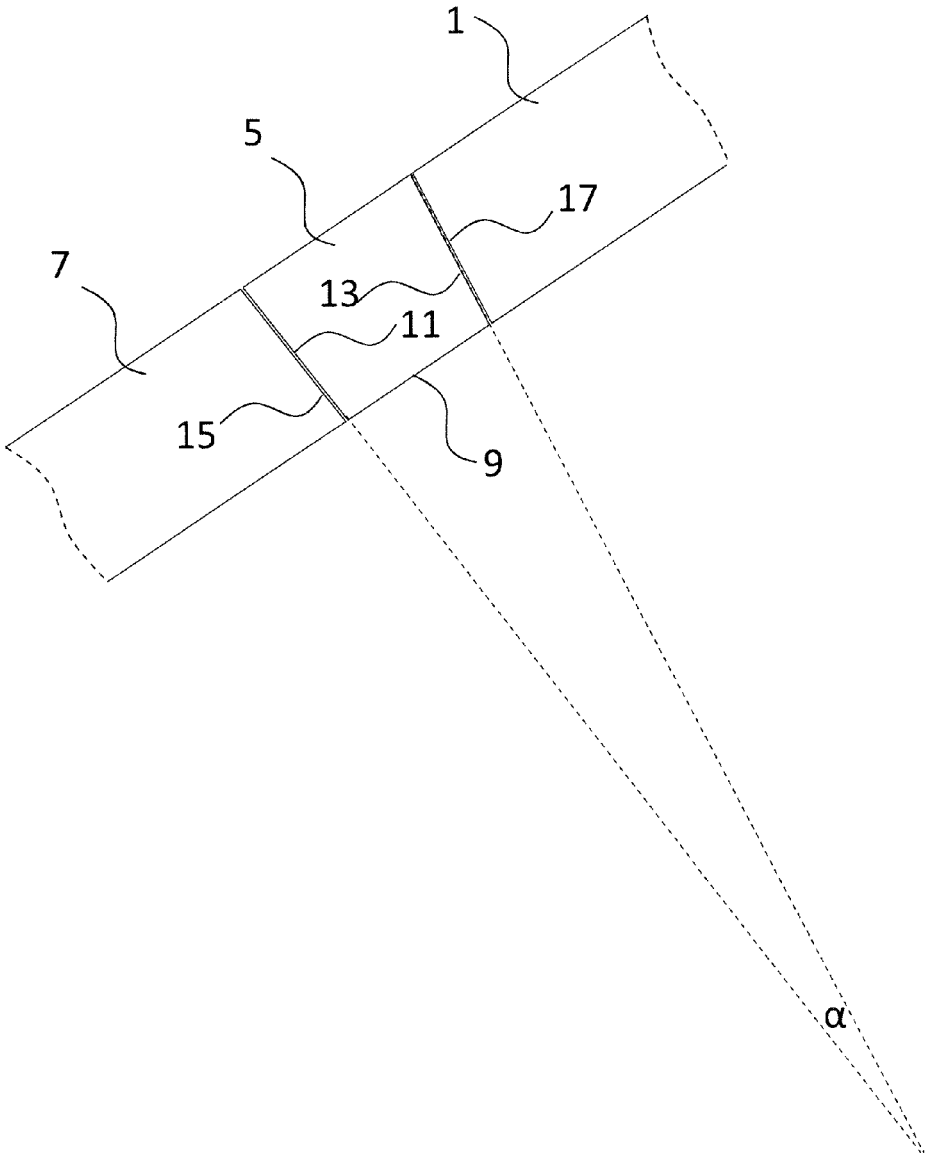

Fig. 1

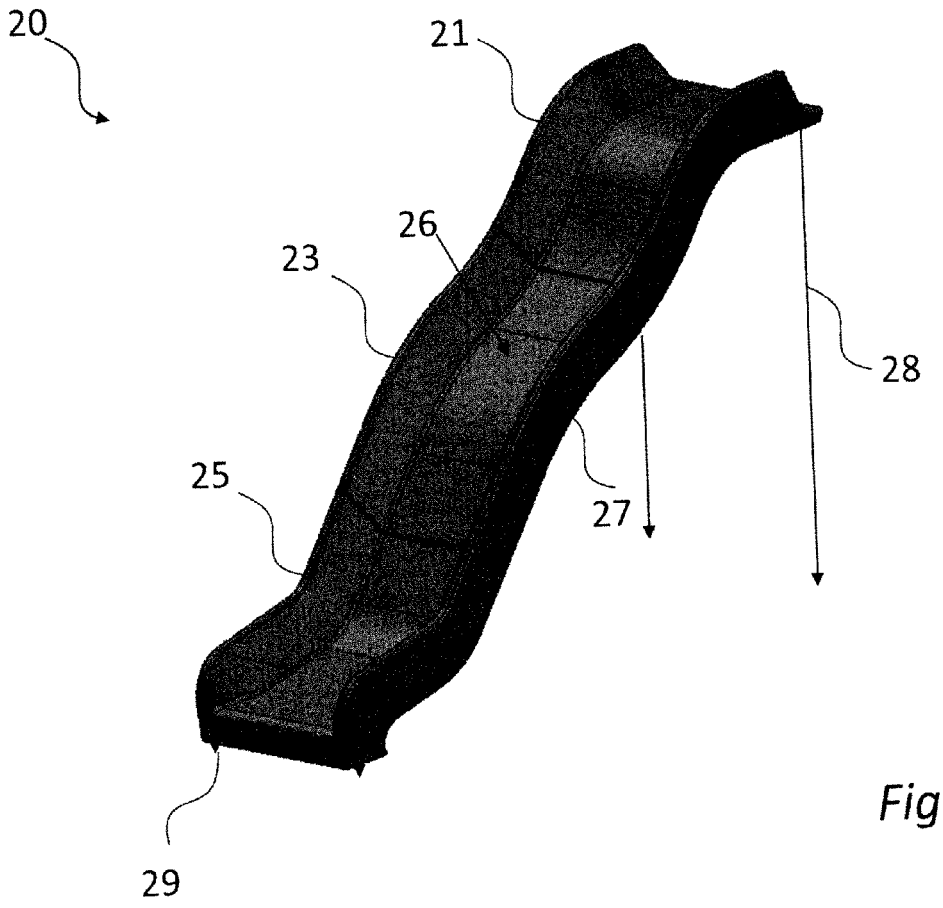

Fig. 2

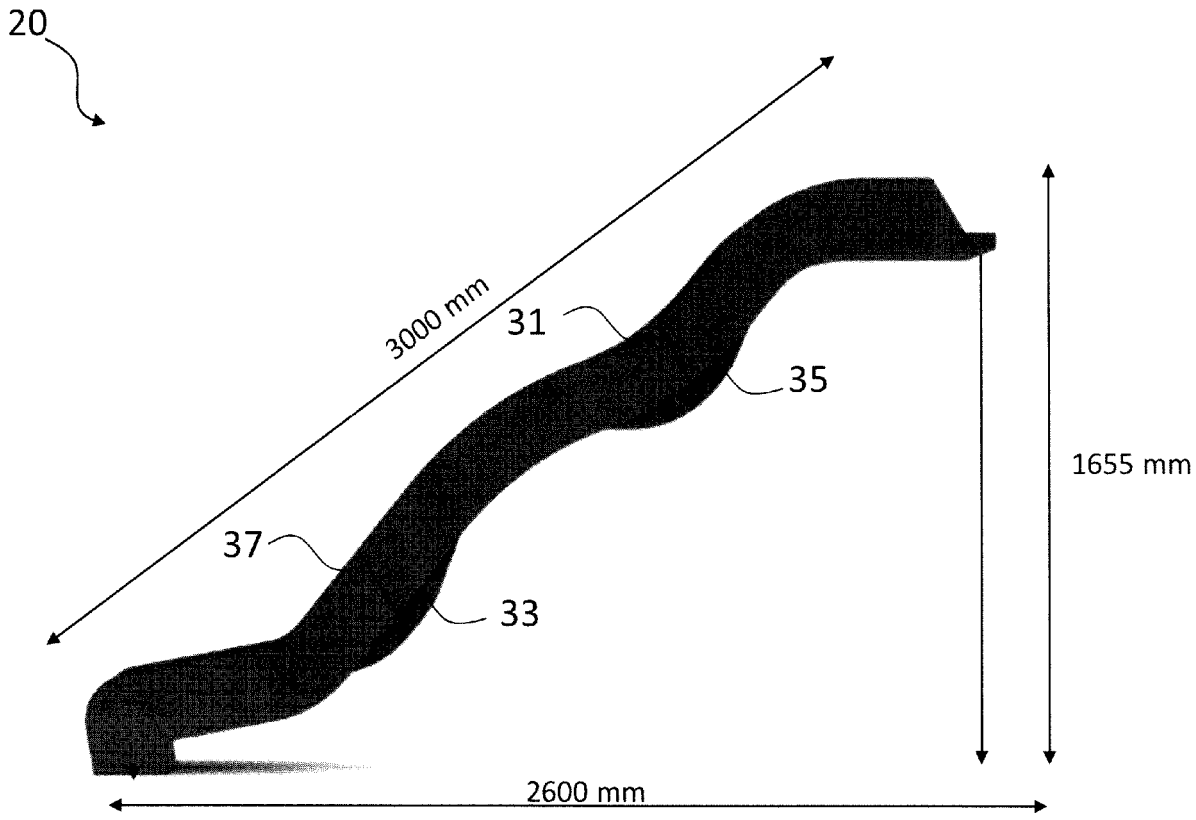

Fig. 3

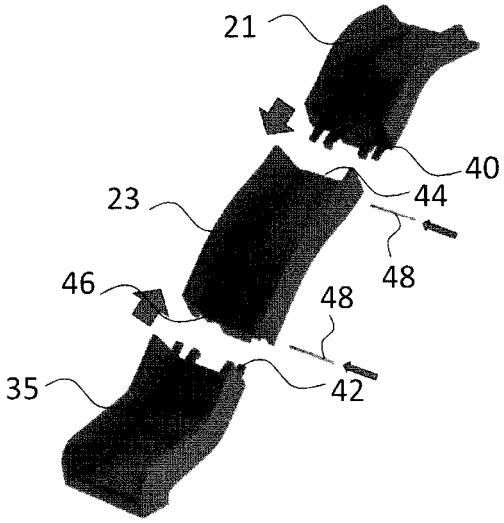

Fig. 4

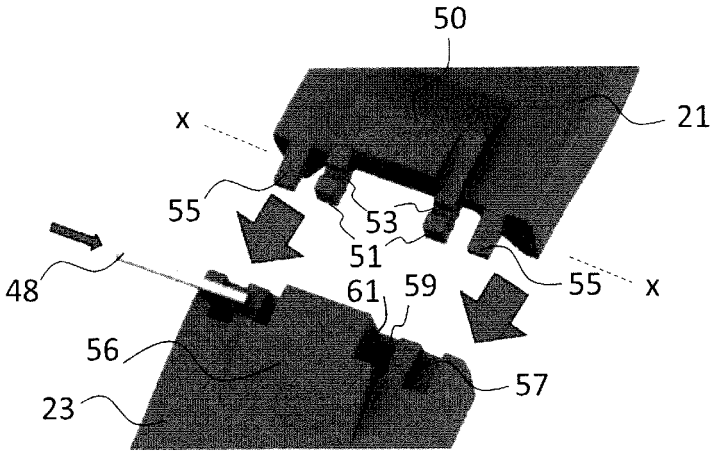

Fig. 5

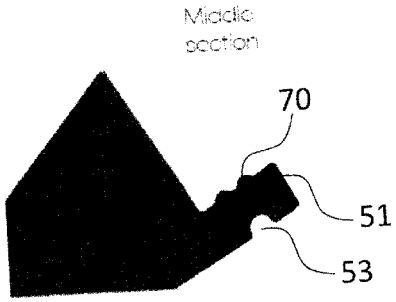

Fig. 7

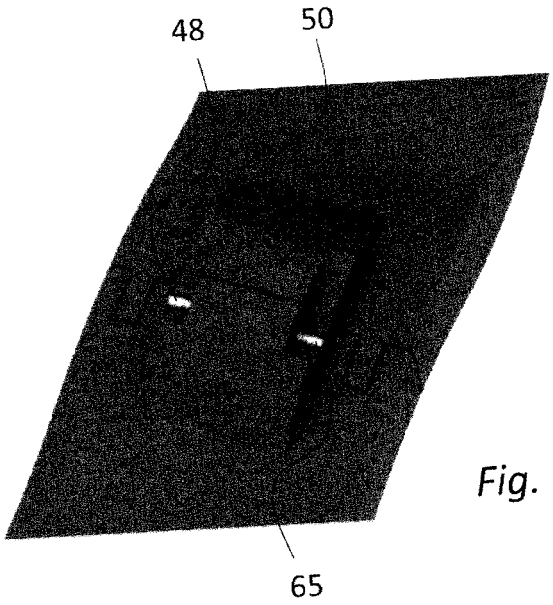

Fig. 6

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 16 25 0005

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 201 783 191 U (INTEX IND XIAMEN CO) 6 April 2011 (2011-04-06) * claims 1-7; figures 1-4 *	1-11	INV. A63G21/02
X	US 2008/207344 A1 (HUERTA ERNESTO [US] ET AL) 28 August 2008 (2008-08-28) * claims 1-25; figures 1-12 *	1-11	
X	US 2011/086717 A1 (CONNORS CHRISTOPHER W [US] ET AL) 14 April 2011 (2011-04-14) * paragraph [0027] - paragraph [0030]; figures 1-9 *	1-11	
X	EP 0 389 152 A1 (POHJOISKALOTTI AB OY [FI]) 26 September 1990 (1990-09-26) * claims 1-8; figures 1-6 *	1-11	
X	US 1 648 196 A (ROHMER GABRIEL E) 8 November 1927 (1927-11-08) * claims 1-4; figures 1-2 *	1-7,11	
A	US 3 667 153 A (CHRISTIANSEN GODTFRED KIRK) 6 June 1972 (1972-06-06) * figures 1,2 *	7-10	TECHNICAL FIELDS SEARCHED (IPC) A63G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 August 2016	Shmonin, Vladimir

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)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 16 25 0005

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

22-08-2016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 201783191 U	06-04-2011	NONE	
US 2008207344 A1	28-08-2008	CA 2579769 A1	26-08-2008
		US 2008207344 A1	28-08-2008
US 2011086717 A1	14-04-2011	NONE	
EP 0389152 A1	26-09-1990	DE 69002264 D1	26-08-1993
		DE 69002264 T2	04-11-1993
		EP 0389152 A1	26-09-1990
		ES 2044427 T3	01-01-1994
US 1648196 A	08-11-1927	NONE	
US 3667153 A	06-06-1972	DE 2032658 A1	21-01-1971
		FR 2054115 A5	16-04-1971
		NL 7009772 A	05-01-1971
		US 3667153 A	06-06-1972

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82