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

(11) EP 2 363 850 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
07.09.2011 Bulletin 2011/36

(51) Int Cl.:
G09F 15/00 *(2006.01)*

(21) Application number: **11156740.0**

(22) Date of filing: **03.03.2011**

(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

(30) Priority: **05.03.2010 NL 2004351**

(71) Applicants:
- **Iac B.V.**
  3771 HW Barneveld (NL)
- **Eureka PD&E BvbA**
  2440 Geel (BE)

(72) Inventors:
- **Boonstra, Dirk**
  3771 HW, Barneveld (NL)
- **van Lieshout, Steven**
  2440, Geel (BE)

(74) Representative: **Verhees, Godefridus Josephus Maria**
Brabants Octrooibureau,
De Pinckart 54
5674 CC Nuenen (NL)

(54) Tightening cord for coupling a sail to a tube

(57) A tightening cord 7 has an elastic cord 11 which is bent into a loop. The two ends 13 of the cord are fixed to a fastening element 15 to which a hook 17 is attached which can be hooked through a grommet. A further hook 19 is attached to this hook 17 in such a way that the two hooks form an S-shaped double hook. The cord 11 bent into a loop can be hooked onto this further hook 19. The further hook 19 as well as the fastening element 15 are then present on different sides of the canvas.

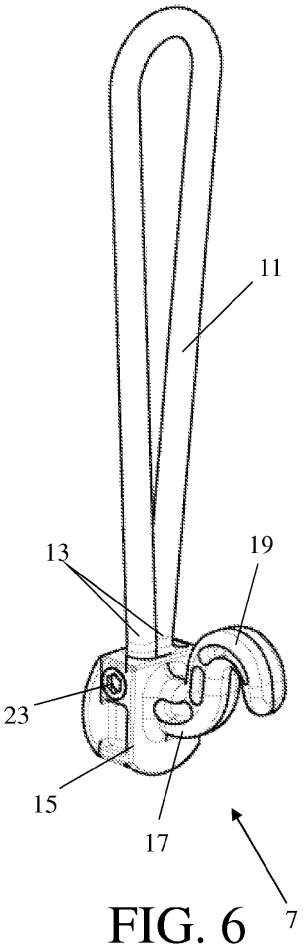

FIG. 6

EP 2 363 850 A2

Description

Field of the invention

[0001] The invention relates to a tightening cord for coupling a canvas to a frame, comprising an elastic cord, as well as a hook which is attached to an end of the cord and can be hooked through a sail grommet provided in the canvas.

State of the art

[0002] A tightening cord of this type is known from JP-A-2001282156. When a canvas in a frame is tightened the hook is stuck through the canvas. The other end of the cord is also coupled to the hook once the cord has been wrapped around a frame tube but then on the other side of the canvas. At this spot the canvas is thus connected to the frame tube by two strands.

Summary of the invention

[0003] It is an object of the invention to provide a tightening cord of the type defined in the opening paragraph by which larger forces can be absorbed. To this end the tightening cord according to the invention is characterised in that a fastening element is fixed to an extremity of the hook to which fastening element both ends of the cord are attached and in that a further hook is attached to the other extremity of the hook in such a way that the two hooks form an S-shaped double hook, where the cord bent into a loop can be hooked onto the further hook and where the further hook as well as the fastening element are present on different sides of the canvas. Since the canvas is coupled to a frame tube by the tightening cord according to the invention by means of four strands, roughly speaking a force twice as big can be absorbed.

[0004] An advantageous embodiment of the tightening cord according to the invention is characterised in that the fastening element is made of a single plastic component. A smart design provides that the fastening element is formed by means of a single injection moulded component.

[0005] Another advantageous embodiment of the tightening cord according to the invention is characterised in that the fastening element is formed by a single wire.

[0006] A further advantageous embodiment of the tightening cord according to the invention is characterised in that the hooks are formed by a double wire. As a result, this hook is about twice as strong as a hook that is formed by a single wire.

Brief description of the drawings

[0007] The invention will be described in more detail based on examples of embodiment of the tightening cord according to the invention while reference is made to the appended drawing figures, in which:

Fig. 1 shows a canvas tightened to a frame by means of a first embodiment of the tightening cord according to the invention;
Fig. 1B shows a detail of the tightened canvas;
Fig. 2 shows a further enlarged detail in the place of a grommet
Fig. 3 shows a side view of the detail shown in Fig. 2;
Fig. 4 shows a longitudinal view of the detail shown in Fig. 2;
Fig. 5 shows a cross-sectional view of the detail shown in Fig. 2;
Fig. 6 shows a perspective view of the first embodiment of the tightening cord;
Fig. 7 shows a detail of a canvas tightened to a frame with a tightening cord according to a second embodiment of the invention;
Fig. 8 shows a perspective view of the second embodiment of the tightening cord; and
Fig. 9 shows a side view of the hook of the tightening cord.

Detailed description of the drawings

[0008] Fig. 1A shows a canvas 3 tightened to a frame 1. The canvas is provided with sail grommets 5 which are connected to the frame tubes 9 by means of tightening cords 7. Fig. 1B shows a detail of the tightened canvas and Fig. 2 shows a further enlarged detail of this in the place of a sail grommet.

[0009] Figs. 3, 4 and 5 show the detail shown in Fig. 2 in a side view, longitudinal view and cross-sectional view respectively. The tightening cord 7 has an elastic cord 11 which is bent into a loop. The two ends 13 of the cord are fixed in a fastening element 15 to which a hook 17 is attached which can be hooked through a sail grommet. A further hook 19 is attached to this hook 17 in such a way that the two hooks form an S-shaped double hook. The cord 11 bent into a loop is hooked onto the further hook 19. The further hook 19 and the fastening element 15 are then present on different sides of the canvas 3.

[0010] For tightening a canvas 3 the double hook is inserted with the hook 17 through a sail grommet 5 of the canvas while the loop is turned around the frame to be subsequently inserted into the further hook 19. The tightening effected in this manner of the canvas 3 to the frame 1 is very strong since the forces of wind load are taken by four elastic strands 11B.

[0011] When the tightening cord 7 according to the invention is installed, the ends 13 of the cord 11 are inserted into a narrow hole 21 in the plastic fastening element 15. The hole 21 that accommodates the two ends has such a construction that the two ends are always side by side in the fastening element 15 in the same position. A screw 23 is turned into a hole provided for this purpose and passes through the two ends 13.

[0012] Fig. 6 shows a perspective view of the tighten-

ing cord for illustrative purposes.

[0013] Fig. 7 shows a detail of a canvas 29 tightened to a frame 27 with a tightening cord 25 according to a second embodiment of the invention. Figs. 8 and 9 show a perspective view and a side view respectively of this second embodiment of the tightening cord. Herein the fastening element 31 and the S-shaped double hook 33 are formed by a twofold wire 35 or, worded differently, a doubly folded wire.

[0014] Albeit the invention described above has been described in the foregoing with reference to the drawing figures, it should be established that the invention is not by any manner or means restricted to the embodiments shown in these drawing figures. The scope of the invention is also extended to any embodiments deviating from the embodiments shown in the drawing figures within the spirit and scope of the claims.

Claims

1. A tightening cord (7; 25) for coupling a canvas (3; 29) to a frame (9; 27), comprising an elastic cord (11), as well as a hook (17) which is attached to an end of the cord and can be hooked through a sail grommet (5) provided in the canvas, **characterised in that** a fastening element (15; 31) is fixed to an extremity of the hook (17) to which fastening element both ends of the cord (11) are attached and **in that** a further hook (19) is attached to the other extremity of the hook in such a way that the two hooks (17, 19) form an S-shaped double hook (33), where the cord (11) bent into a loop can be hooked onto the further hook (19) and where the further hook as well as the fastening element (15; 31) are present on different sides of the canvas (3).

2. A tightening cord (7) as claimed in claim 1, **characterised in that** the fastening element (15) is made of a single plastic component.

3. A tightening cord (25) as claimed in claim 1, **characterised in that** the fastening element (31) is formed by a single wire.

4. A tightening cord (25) as claimed in claim 3, **characterised in that** the hooks are fromed by a double wire (35).

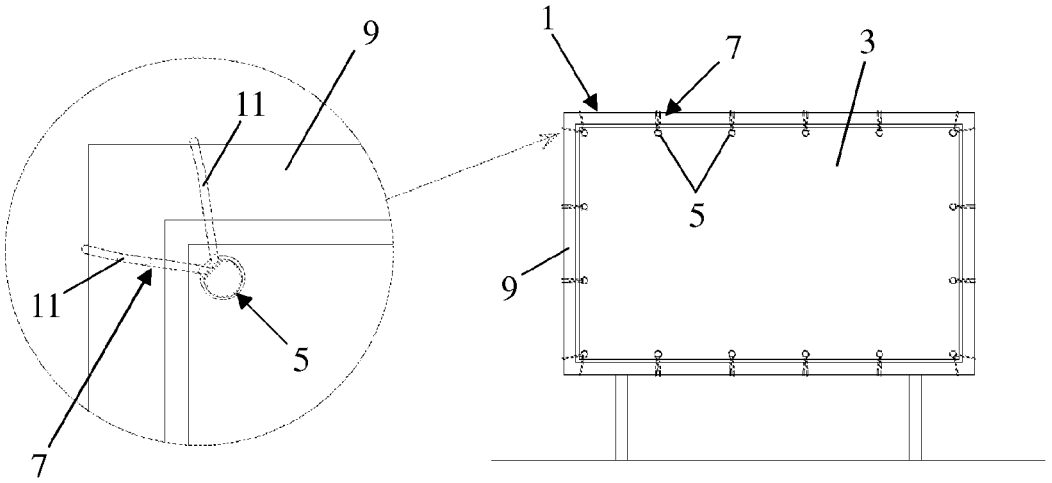

FIG. 1A FIG. 1B

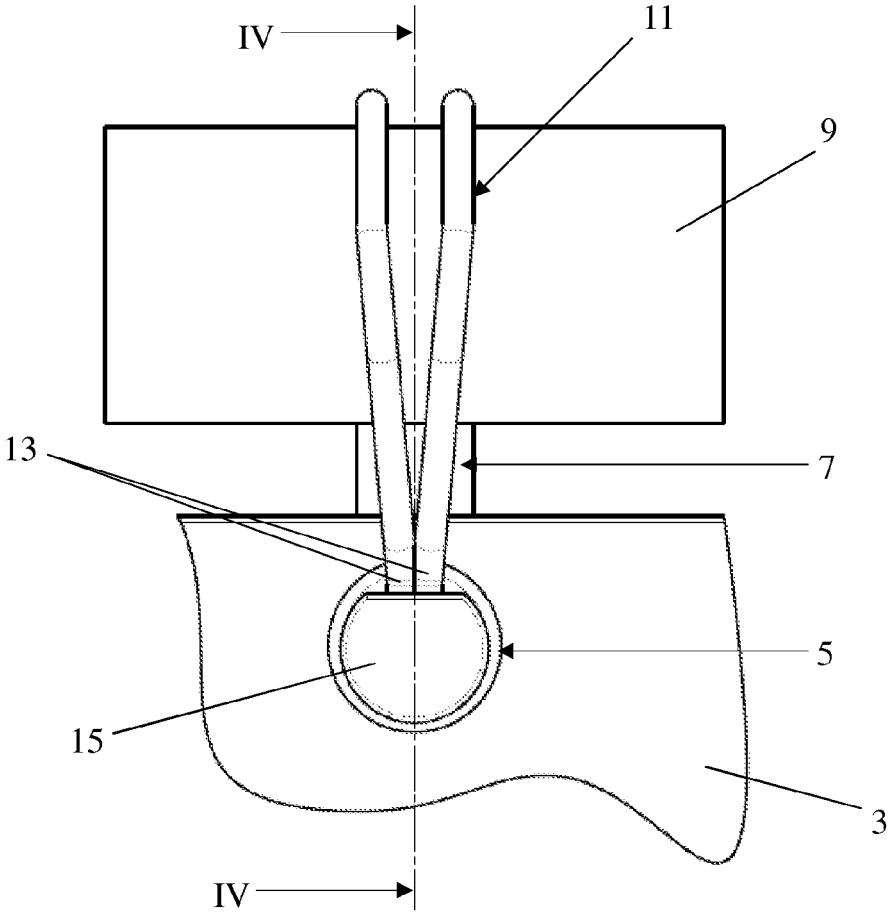

FIG. 2

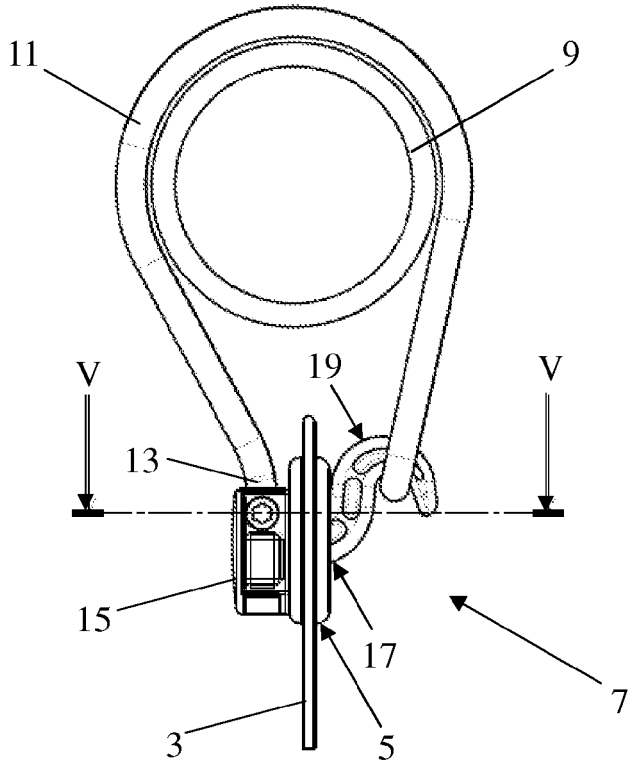

FIG. 3

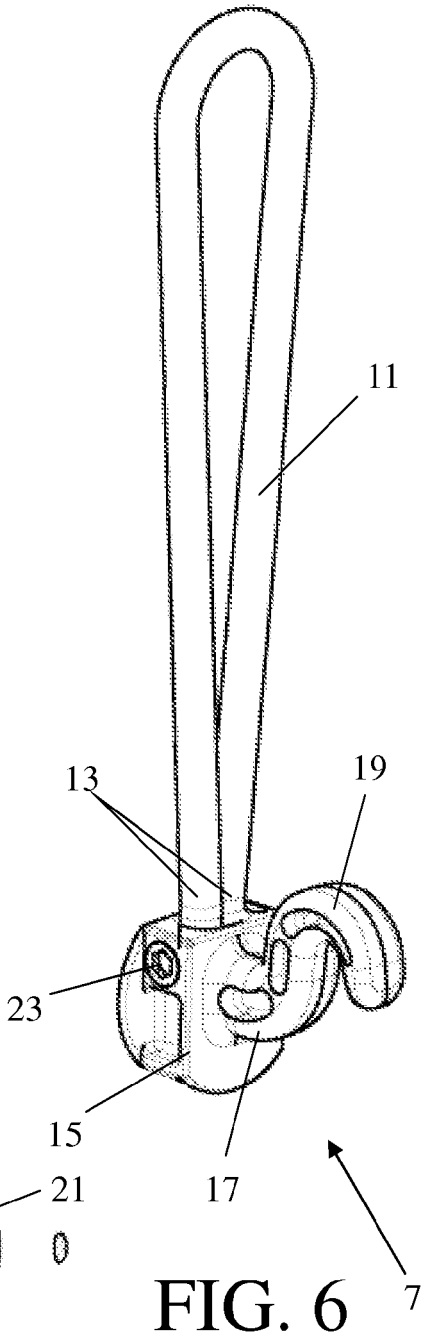

FIG. 6

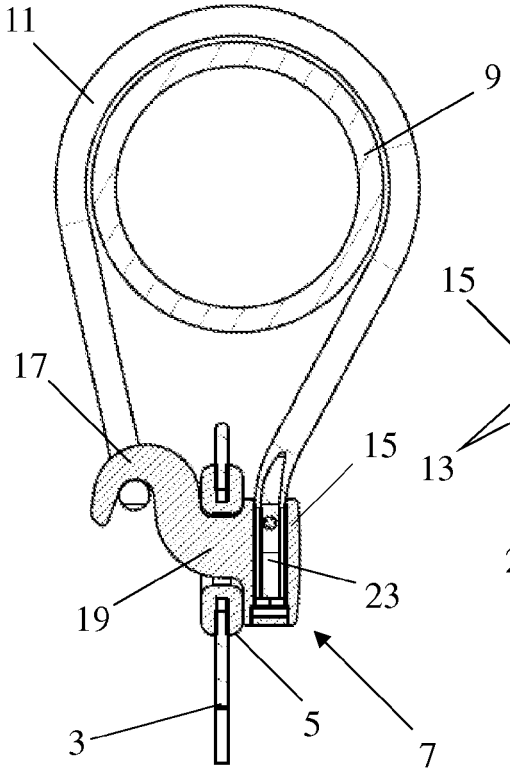

FIG. 4

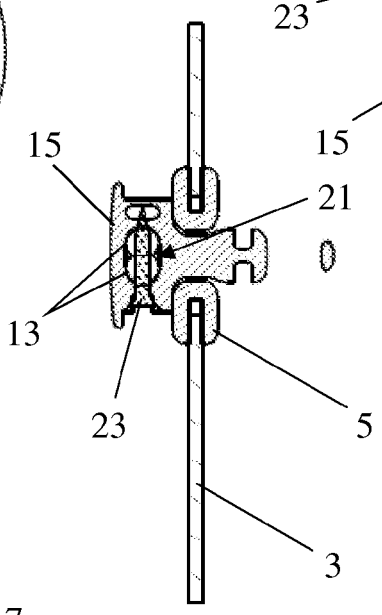

FIG. 5

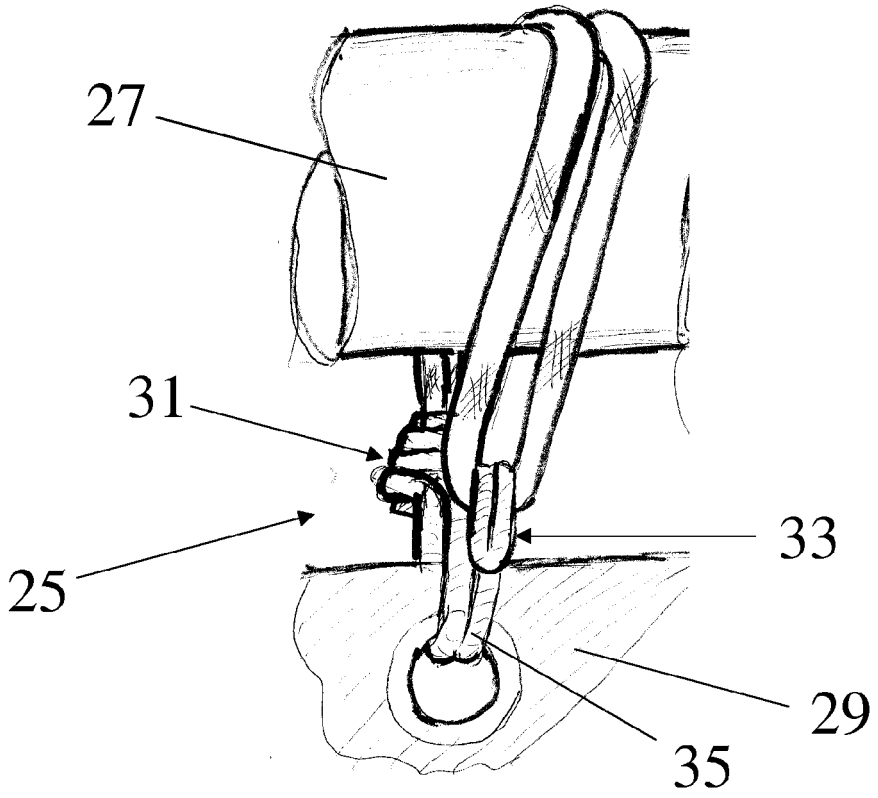

FIG. 7

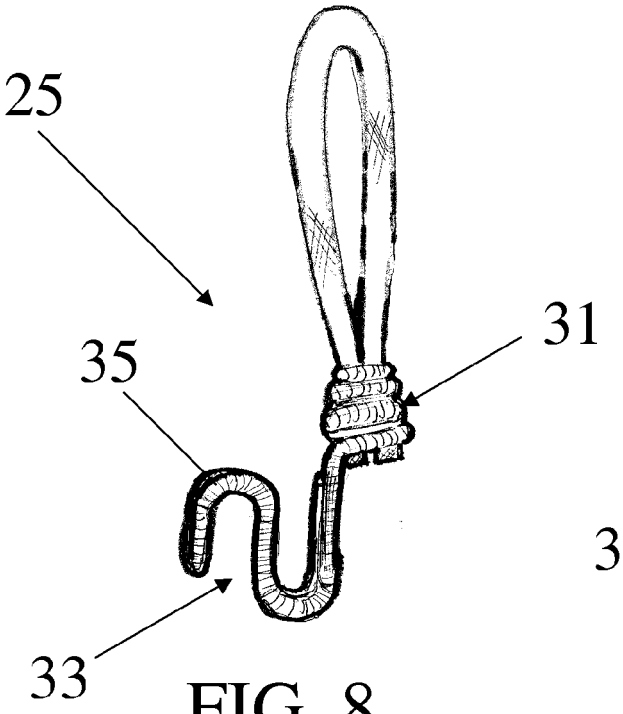

FIG. 8

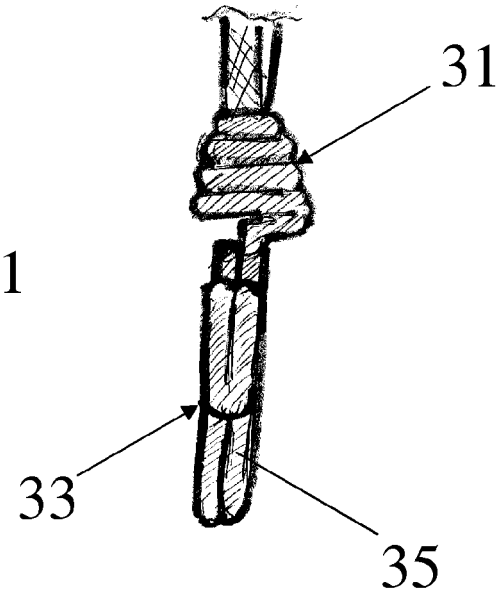

FIG. 9

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 2001282156 A **[0002]**