Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2390783 C 2009/12/29

(11)(21) 2 390 783

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(22) Date de dépôt/Filing Date: 2002/06/14

(41) Mise à la disp. pub./Open to Public Insp.: 2003/01/02

(45) Date de délivrance/Issue Date: 2009/12/29

(30) Priorité/Priority: 2001/07/02 (EP01 810639.3)

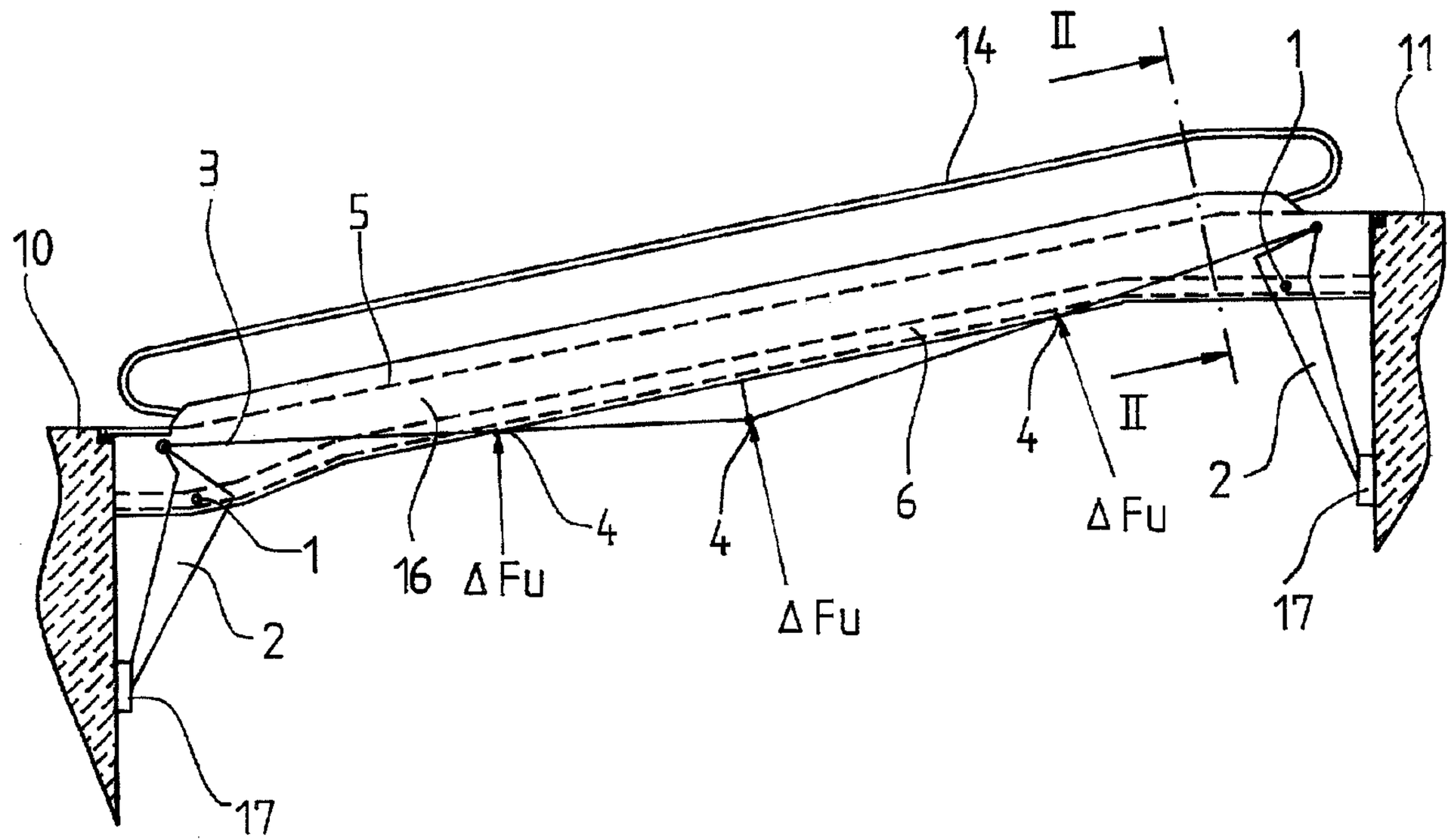
(51) Cl.Int./Int.Cl. *B66B 21/00* (2006.01),
B66B 23/00 (2006.01)

(72) Inventeur/Inventor:
KRAMPL, DAVID, AT

(73) Propriétaire/Owner:
INVENTIO AG, CH

(74) Agent: RICHES, MCKENZIE & HERBERT LLP

(54) Titre : ESCALIER MECANIQUE OU TROTTOIR MECANIQUE AVEC STRUCTURE SUPPORT
(54) Title: ESCALATOR OR MOVING WALKWAY WITH SUPPORT STRUCTURE



(57) Abrégé/Abstract:
The escalator or moving walkway has at both sides a respective support structure (16) supported between the rests at a cable (3), which is arranged laterally or below the support structure (16). According to the invention there is provided in the region of each rest a respective lever (2) which is rotatably mounted at the support structure (16) and is slidingly supported by one arm at the building structure, the cable (3) being fastened to the other arm of the lever so that the cable (3) is additionally tensioned when the support structure (16) bends. In this manner, the construction is very stiff so that the escalator bends only slightly even under heaving loading.

Abstract

The escalator or moving walkway has at both sides a respective support structure (16) supported between the rests at a cable (3), which is arranged laterally or below the support structure (16). According to the invention there is provided in the region of each rest a respective lever (2) which is rotatably mounted at the support structure (16) and is slidingly supported by one arm at the building structure, the cable (3) being fastened to the other arm of the lever so that the cable (3) is additionally tensioned when the support structure (16) bends. In this manner, the construction is very stiff so that the escalator bends only slightly even under heaving loading.

(Fig. 1)

Escalator or moving walkway with support structure

The present invention relates to an escalator or a moving walkway with at least one support structure supported between the rests at a cable, which is arranged, as an auxiliary support structure, laterally or below the support structure. The cable is also termed under-bracing. A support structure is usually present at both sides of the escalator or moving walkway.

Such an escalator or such a moving walkway is known from EP 866019 A1. By virtue of the under-bracing the support structure can bridge over longer spans or it can be dimensioned less strongly for the same span, so that the escalator or moving walkway appears more slender.

It is disadvantageous with this known construction that the cable stretches when the support structure bends in consequence of loading and is thereby supported more strongly at the cable, so that the cable does not sufficiently counteract bending deflections. However, such a bending deflection is permissible only to a small extent, because otherwise disturbances arise in the mechanical system of the escalator or moving walkway.

It is the object of the present invention to develop an escalator or a moving walkway of the kind stated in the introduction in such a manner that the supporting effect of the overall construction is increased, i.e. bends less under load.

According to the invention this object is met by an escalator or a moving walkway of the kind stated in the introduction in that in region of each rest there is provided a respective lever which is rotatably mounted at the support structure and which is slidingly supported by one arm at the building structure, the cable being fastened to the other arm of the lever so that the cable is additionally tensioned with increasing loading (useful load) and thereby increases the supporting effect.

Since the cable is tensioned more strongly when the support structure is loaded, the tension in the cable is increased so that the main support structure is raised relatively at the support points.

In one aspect, the present invention resides in an escalator or moving walkway with at least one support structure supported between rests of a building structure at a cable which is arranged laterally or below the support structure, characterised in that provided in the region of each rest is a respective lever, each of the respective levers having a first arm and a second arm, each of the respective levers are rotatably mounted at the support structure and slidingly supported by the first arm at the building structure, the cable being fastened to the second arm of the respective levers so that the cable is additionally tensioned with increasing load and increases the supporting effect and reduces bending.

In another aspect, the present invention resides in an escalator or moving walkway, comprising an escalator or moving walkway supported on a support structure having opposed ends supported by rests of a building structure: first and second levers rotatably mounted to the support structure proximate the ends thereof, each of the levers having a first arm slidingly supported by the building structure, and a tensioned supporting cable extending between second arms of the levers, whereby the cable is additionally tensioned by a pivoting action of the levers with increasing load to increases the cable's supporting effect to reduce bending of the support structure.

Further features and advantages of the invention are evident from the following description of an embodiment by reference to the accompanying drawing, in which:

Fig. 1 shows a moving walkway according to the invention from the side and

Fig. 2 shows a section along the line II-II in Fig. 1.

The moving walking connects a first storey with a second storey. It bears by way of rests (not illustrated) on the respective storey floor 10 or 11. The moving walkway is bounded laterally by balustrades 12, 13, for example of glass, which carry a handrail 14, 15 at the top. Disposed at both sides of the moving walkway is, as usual, a support structure 16 which is constructed as a framework with an upper boom 5 and a lower boom 6. A respective lever 2 is mounted at each of the ends of the support structure at the point 1, and, in particular, at the lower boom 6 or in the vicinity thereof. This lever 2 is supported by way of slide bearing 17, which can be constructed as a damping plate, at the respective storey floor 10 or 11. A respective end of a cable 3 is fastened to the other end of each lever 2 and is connected with the support structure at the support points 4. This cable 3 serves as an under-bracing.

The present invention functions as follows: if the moving walkway is strongly loaded, the support structure begins to bend. This bending is counteracted by the cable 3, on which the support structure 16 is supported at a support points 4. The cable is thereby additionally loaded, so that it stretches somewhat. Due to the bending deflection of the support structure 16, the lower boom 6 stretches and the upper boom 5 shortens. The points 1 which lie at the lower boom therefore creep somewhat apart, i.e. in each case in the direction towards the adjacent storey floor 10 or 11. The lower ends of the levers 2 thereby slide in the slide bearings 17 somewhat downwardly and the two levers 2 rotate so that the upper ends thereof move more strongly in the direction towards the respective storey floor 10 or 11 than the points 11. The cable 3 is thereby tensioned, whereby an additional support force)Fu acts at the support points.

In total, four levers 2 of that kind are present, namely two in each instance at both sides of the moving walkway at the upper end and the lower end. The construction can be laterally stabilised by diagonal struts 18 (see Fig. 2).

What is claimed is:

1. Escalator or moving walkway with at least one support structure supported between rests of a building structure at a cable which is arranged laterally or below the support structure, characterised in that provided in the region of each rest is a respective lever, each of the respective levers having a first arm and a second arm, each of the respective levers are rotatably mounted at the support structure and slidingly supported by the first arm at the building structure, the cable being fastened to the second arm of the respective levers so that the cable is additionally tensioned with increasing load and increases the supporting effect and reduces bending.

2. An escalator or moving walkway, comprising an escalator or moving walkway supported on a support structure having opposed ends supported by rests of a building structure: first and second levers rotatably mounted to the support structure proximate the ends thereof, each of the levers having a first arm slidingly supported by the building structure, and a tensioned supporting cable extending between second arms of the levers, whereby the cable is additionally tensioned by a pivoting action of the levers with increasing load to increases the cable's supporting effect to reduce bending of the support structure.

3. The escalator or moving walkway of claim 2 wherein a portion of the cable extends below the support structure.

4. The escalator or moving walkway of claim 2 wherein a portion of the cable is located laterally of the support structure.

5. The escalator or moving walkway of claim 2 wherein the cable is connected to the support structure at a point between the second arms of the levers.

6. The escalator or moving walkway of claim 2 wherein the first and second levers are located along a side of the support structure.

7. The escalator or moving walkway of claim 6 further comprising a second pair of first and second levers located along a second side of the support structure and a second tensioned supporting cable extending between second arms thereof.

Fig. 1

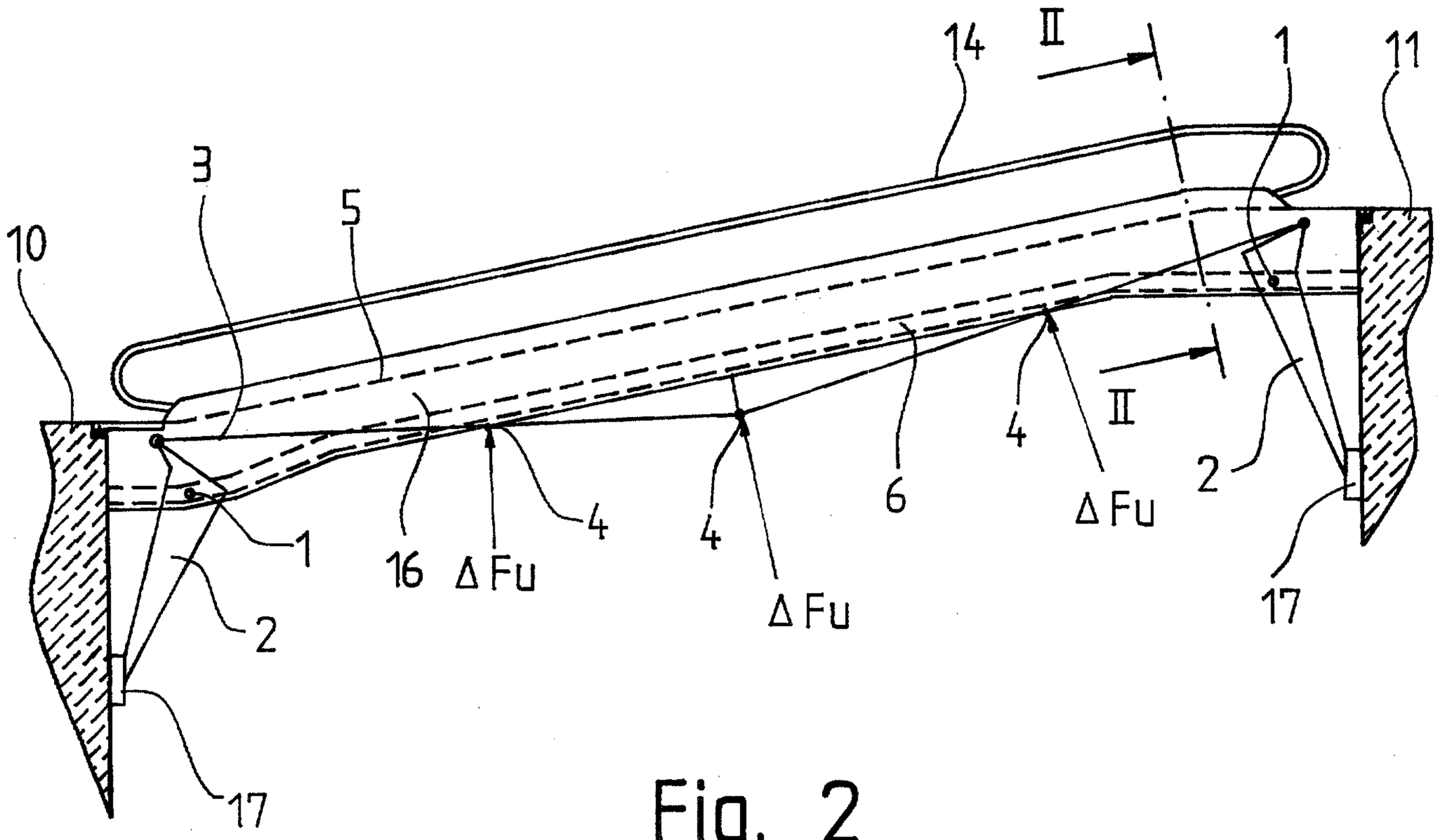
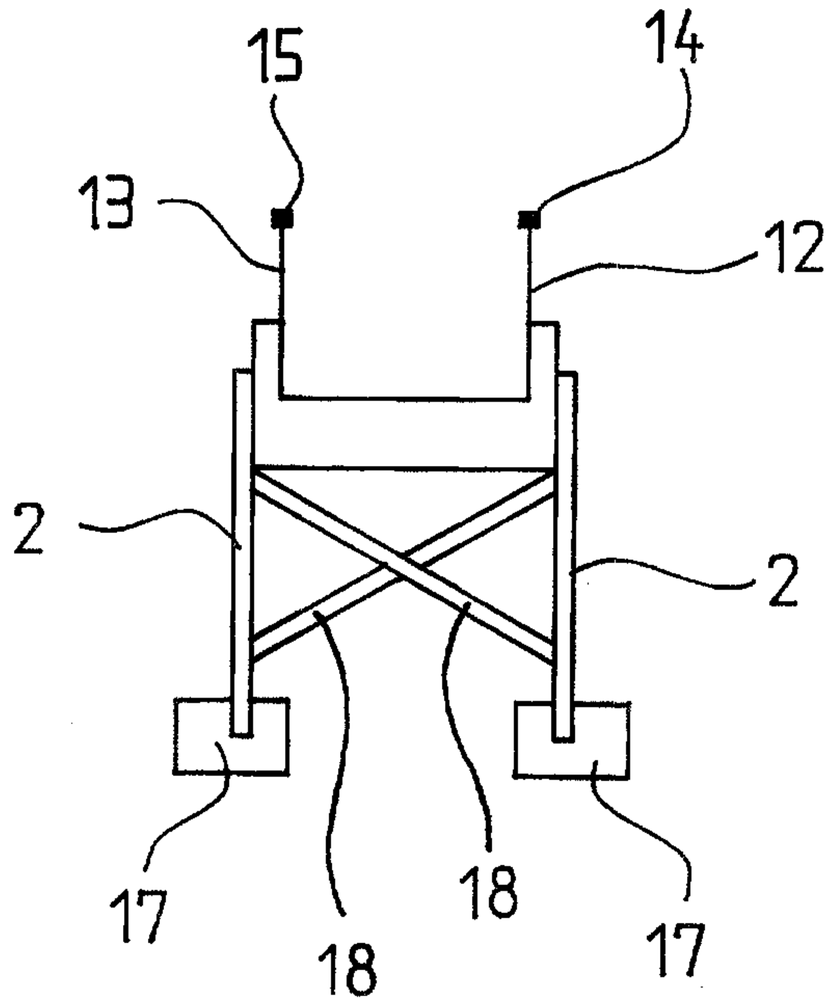
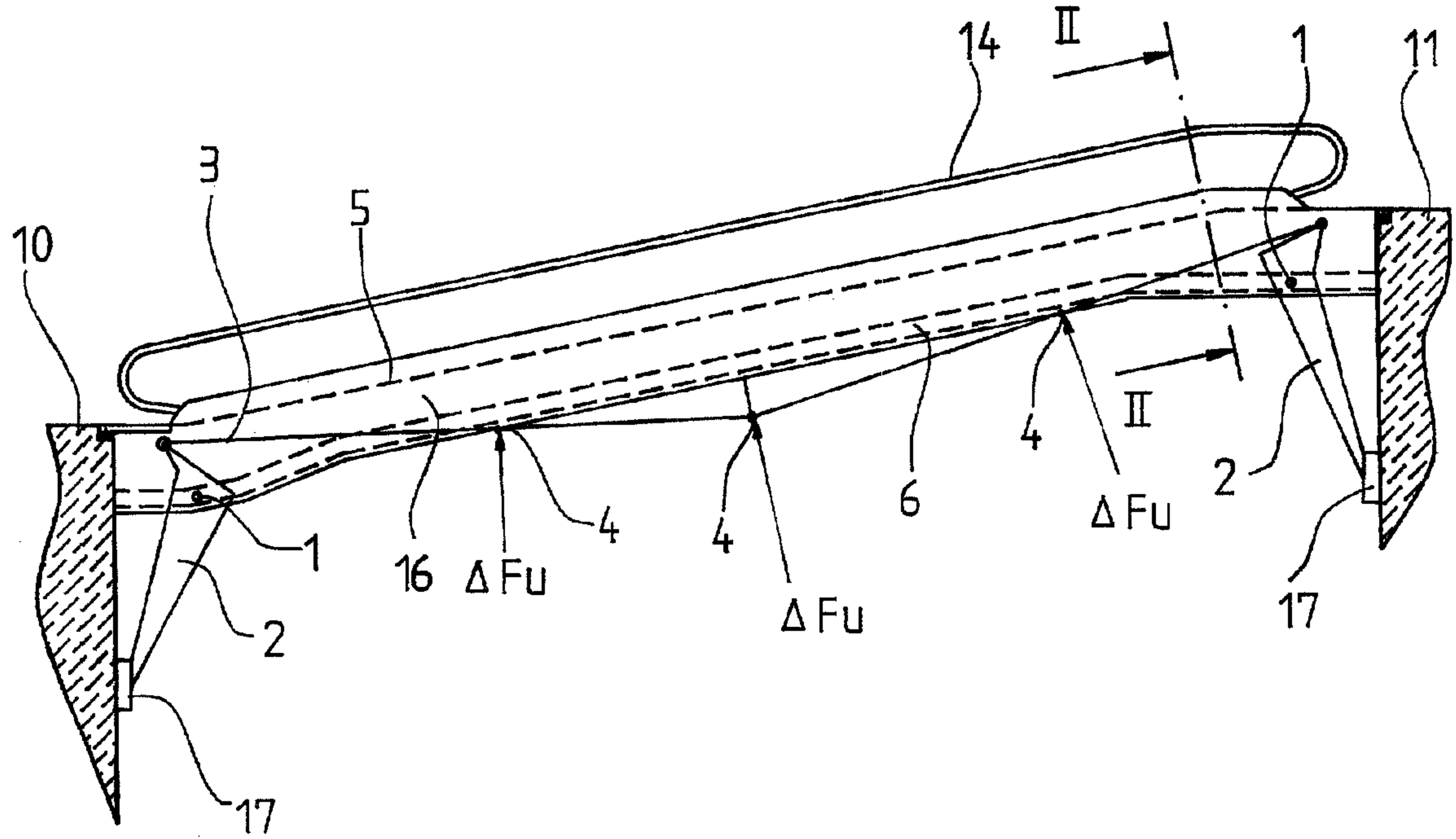

14
II
1
11
10
3
5
6
4
II
2
4
4
1
16
ΔFu
4
ΔFu
ΔFu
2
17
17

Fig. 2


15
14
13
12
2
2
17
18
18
17


14
II
1
11
3
5
10
4
II
2
ΔFu
1
16
ΔFu
4
4
6
ΔFu
2
17