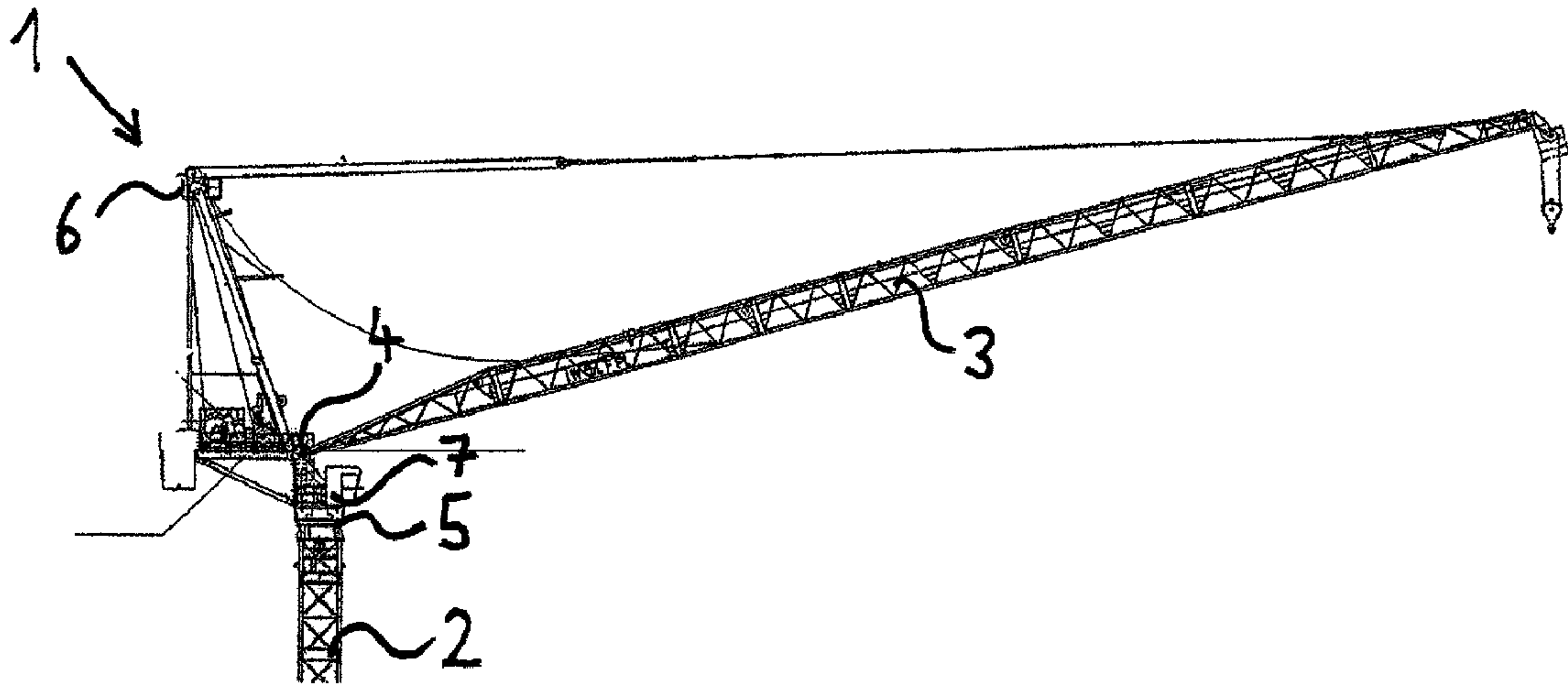




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(54) **Title: LUFFING-JIB TOWER CRANE**



(57) **Abrégé/Abstract:**

A luffing-jib tower crane, comprising a tower and a jib which is connected to a section of the tower via a joint, wherein the jib and that section of the tower which is connected to it can be rotated about the vertical axis by means of at least one slewing gear, wherein the luffing-jib tower crane has: at least one measuring device which, at least in the out-of-service state of the luffing-jib tower crane, measures the wind direction and the wind strength, and a control device, to which the measured values are transmitted and which, if a predefined wind-strength measured value is exceeded, causes the jib to rotate in the measured wind direction by means of the slewing gear.



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(54) Title: LUFFING-JIB TOWER CRANE

(54) Bezeichnung : WIPPAUSLEGER-TURMKRAN

(57) Abstract: A luffing-jib tower crane, comprising a tower and a jib which is connected to a section of the tower via a joint, wherein the jib and that section of the tower which is connected to it can be rotated about the vertical axis by means of at least one slewing gear, wherein the luffing-jib tower crane has: at least one measuring device which, at least in the out-of-service state of the luffing-jib tower crane, measures the wind direction and the wind strength, and a control device, to which the measured values are transmitted and which, if a predefined wind-strength measured value is exceeded, causes the jib to rotate in the measured wind direction by means of the slewing gear.

(57) Zusammenfassung: Wippausleger-Turmkran, umfassend einen Turm und einen über ein Gelenk mit einem Abschnitt des Turms verbundenen Ausleger, wobei der Ausleger und der damit verbundene Abschnitt des Turms mittels mindestens eines Schwenkwerks um die vertikale Achse drehbar sind, wobei der Wippausleger-Turmkran aufweist: mindestens eine Messvorrichtung, die zumindest im Außerbetriebs-Zustand des Wippausleger-Turmkrans die Windrichtung und die Windstärke misst, und eine Steuerungsvorrichtung, an die die Messwerte übermittelt werden und die bei Überschreitung eines vorgegebenen Windstärkemesswerts ein Drehen des Auslegers mittels des Schwenkwerks in die gemessene Windrichtung veranlasst.



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Luffing-jib tower crane

The invention relates to a luffing-jib tower crane, in which at least the jib is rotatable.

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Tower cranes comprise a crane base, from which a tower extends upward. A jib and possibly a counter jib are attached to an upper section of the tower. In the case of luffing-jib tower cranes, a jib is connected to the tower via a joint, and therefore the angle of the jib with respect to the horizontal plane is changeable. The jib length is also changed in this manner. In the case of the design of luffing-jib tower cranes, to which the present invention refers, the jib and that section of the tower which is connected thereto are rotatable about the vertical axis by means of at least one slewing gear. The rotatable (upper) section of the crane is sometimes also referred to as a rotary part.

20 In a "storm" load situation, when the crane is not in operation, i.e. when a certain wind strength is exceeded, in order for the tower crane to be stable, the tower crane has to rotate into the wind, i.e. the rotary part with the jib points in the wind direction

25 ("weather vane" principle). In the case of trolley

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jibs, because of the long jib (with a shorter counter jib), this always takes place automatically, i.e. by means of the wind itself. In the case of luffing-jib tower cranes, this is no longer ensured in the case of
5 a small jib length (typically under 20 m), for example because the wind torque of the counter jib can no longer be compensated for due to the small wind torque of the jib. Accordingly, the wind does not then approach from the rear (the jib points in the wind
10 direction), but rather from the side or from the front. This means a significantly lower degree of stability in the event of strong winds (storm). A known means for reducing this risk consists, in particular for jib lengths in the region of approx. 13 m to 20 m, in
15 equipping the jib with additional wind vanes. However, this means no longer functions if the jib lengths are even smaller.

The invention is based on the object of providing a
20 luffing-jib tower crane, in which the risks described are avoided.

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This object is achieved by a luffing-jib tower crane, comprising a tower and a jib which is connected to a section of the tower via a joint, wherein the jib and that section of the tower which is connected thereto are rotatable about the vertical axis by means of at least one slewing gear, the luffing-jib tower crane further comprising: at least one measuring device which, at least when the luffing-jib tower crane is not in operation, measures the wind direction and the wind strength; and a control device to which the measured values are transmitted and which, if a predefined wind strength measured value is exceeded, causes the jib to rotate in the measured wind direction by means of the slewing gear.

In some embodiments electric energy for the measuring device, the control device and/or rotation of the slewing gears is provided by a generator or a battery.

The invention is further explained below in conjunction with Figure 1 which is a side view of a luffing-jib tower crane according to an aspect of the present invention.

Referring to Figure 1, a luffing-jib tower crane (1) includes a tower (2) and a jib (3) which is connected to a section of the tower via a joint (4). This tower section and the jib are rotatable about the vertical axis by means of at least one slewing gear (5). The luffing-jib tower crane (1) has at least one measuring device (6) which, at least when the luffing-jib tower crane (1) is not in operation, measures the wind direction and the wind strength. The luffing-jib tower crane (1) also includes a control device (7) to which the measured

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values are transmitted and which, if a predefined wind strength measured value is exceeded, causes the jib (3) to rotate in the measured wind direction by means of the slewing gear (5).

5

In contrast to the known solutions which constitute a "passive" wind control, the luffing-jib tower crane (1) according to the invention has an "active" wind control when the crane is not in operation. This makes it possible, in particular in the case of very small jib lengths, to ensure a correct jib position if a certain wind strength is exceeded. If a predetermined wind strength measured value is exceeded, the jib (3) is "actively" rotated in the measured wind direction, and therefore the jib points in the wind direction.

10 This decisively increases the stability of the luffing-jib tower crane (1). If a plurality of adjacent cranes have the features according to the invention, said cranes may also be erected at a smaller distance than hitherto.

20 The invention proves particularly advantageous if the components required for the "active wind control" are operated with electric energy, and the electric energy for the measuring device (6), the control device (7) and/or the rotation of the slewing gears (5) is provided by a generator

25 or a battery. The wind control according to the invention when the crane is not in operation then functions irrespective of whether the other energy supply of the crane fails.

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The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A luffing-jib tower crane, comprising a tower and a jib which is connected to a section of the tower via a joint, wherein the jib and that section of the tower which is connected thereto are rotatable about the vertical axis by means of at least one slewing gear, the luffing-jib tower crane further comprising: at least one measuring device which, at least when the luffing-jib tower crane is not in operation, measures the wind direction and the wind strength; and a control device to which the measured values are transmitted and which, if a predefined wind strength measured value is exceeded, causes the jib to rotate in the measured wind direction by means of the slewing gear.

2. The luffing-jib tower crane as claimed in claim 1, wherein electric energy for the measuring device, the control device and/or rotation of the slewing gears is provided by a generator or a battery.

Drawing Sheet 1/1

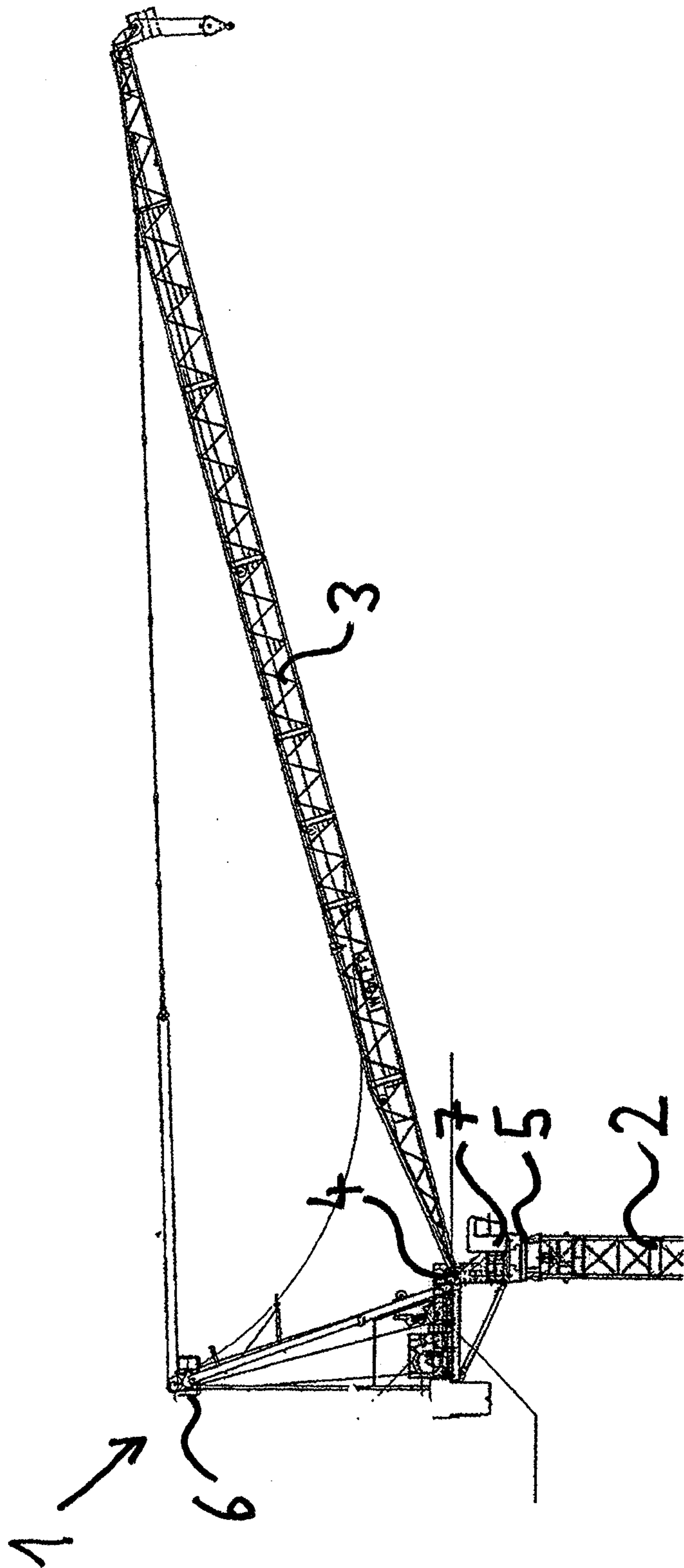


Figure 1

