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

(11) **EP 2 325 066 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
25.05.2011 Bulletin 2011/21

(51) Int Cl.:
B61D 19/00 *(2006.01)* ***E05B 65/14*** *(2006.01)*

(21) Application number: **10192399.3**

(22) Date of filing: **24.11.2010**

(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: **24.11.2009 SK 500872009 U**
16.04.2010 SK 500302010 U

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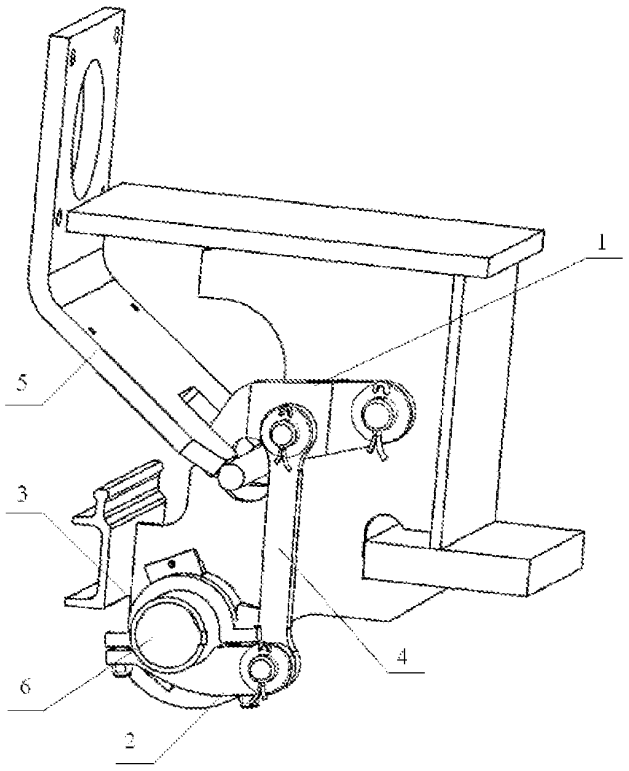
(54) **Mechanism for locking the sidewall of a railway freight wagon**

(57) Mechanism for locking the sidewall of freight railway consists of the locking catch (1) connected through the draw-bar (4) with the lever (2) equipped with the socket (3), whereby the locking catch (1) is created to secure the sidewall from above, or from below, and it is, through the draw-bar (4), lever (2) and the socket (3), connected with the rotating shaft (6) adjustably.



Picture 1 – Locked sidewall

EP 2 325 066 A2

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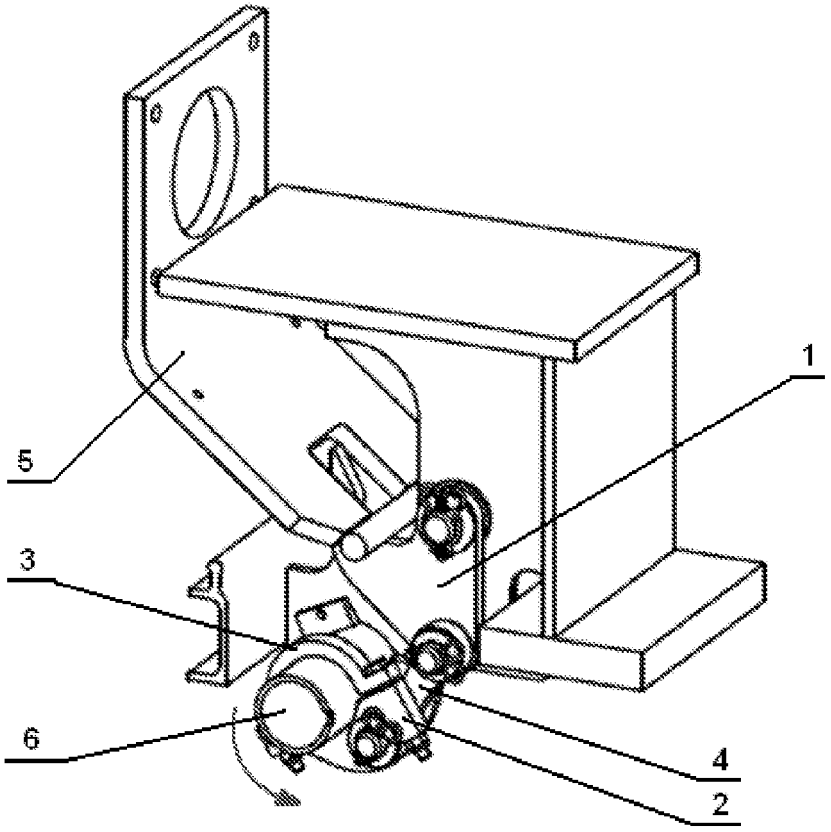


Picture 6 - Locked sidewall

Description

Field of technology

[0001] Invention relates to covered freight railway wagons with sliding sidewalls.

Actual state of technology

[0002] There are known freight railway wagons with sliding walls from various manufacturers. These wagons have two firm front walls placed at the wagon ends; in the central wagon part, there is a firm central portal; in the upper part, there is a firm roof beam, and four sliding sidewalls that can be individually controlled and which are parallel with longitudinal wagon axis, from which two oppositely arranged sidewalls can be opened and moved alongside the closed sidewall, adjacent to it, in the longitudinal direction. These sidewalls are guided in a guiding device, upper part of which is arranged in the area of the roof beam and lower part under the wagon floor level. Generally, they can be moved from closed transportation position to opened position, and vice versa, by means of firm rail. Before that, the sidewall moves onto this rail by means of rotating shaft operated by operating element placed on the firm front.

[0003] Sidewalls are secured against springing out of this rail in the longitudinal and in the transverse direction.

[0004] Despite this securing, the sliding aluminium walls show inadmissible cross clearance after closing. This causes problems with transported materials because of dustiness, water leakage due to rain or snow.

[0005] Manufacturers try to solve this problem by various methods, which aim is to stabilize position of the sidewalls in the transverse direction. Generally it means addition of another securing element. Securing element can be created in the form of pin on the sidewall, which fits into the firm seat on the wagon frame after the sidewall is closed. Another securing element can be in the form of cog that is firmly placed on the rotating shaft. After the sidewall is closed, this cog presses the sidewall to the wagon frame. Not every securing element is suitable for all covered freight railway wagons with sliding sidewalls.

[0006] EP 1034992, for example, protects securing of the sidewall against falling out during opening and closing of the sidewall of the wagon type Habbiins, but it does not solve the problem of the inadmissible cross clearance. With locking and unlocking of the sidewall, but also with opening and closing of the doors deals also W02006/029856. But protected process cannot be applicable for the wagons type Habbiins.

[0007] Utility design DE 7740233 U1 solves the problem of inadmissible cross clearance of the wagon type Habbiins, which, for control of the locking, uses rotating shaft (rotating shaft is known in the wagons Habbiins and it is commonly used) in the way that:

- Movement of the sidewall during locking/unlocking is rectilinear in the horizontal plane from/towards the wagon longitudinal axis, in comparison with known and commonly used movement of the sidewall on the curved line
- Movement of the lock shoe during locking/unlocking is also rectilinear in the horizontal plane from/towards the wagon longitudinal axis

[0008] The same problem solves also WO 03/013934 A1, according to which, there is used, for lock operation, a rotating shaft; transfer of control fore to the locking catch is performed by means of draw-bar and the locking catch is fulcrumed on the pin firmly connected to the chassis frame rib. For adjustment of mechanism, there is used a longitudinally adjustable draw-bar. The sidewall holder is equipped with an opening. During locking, a locking catch pin fits into this opening. This locking catch secures the sidewall holder from below.

[0009] Removal of this problem, i.e. inadmissible cross clearance of the sidewalls after closing, solves, with advantage, new mechanism, which has alternative variants. The first variant is securing of the sidewall from above; alternative solution is securing of the sidewall from below.

Nature of invention

[0010] The nature of this invention is new mechanism for locking of the sidewall of covered freight railway wagon, which consists of locking catch connected by means of draw-bar with a lever, which is, by the socket, adjustably connected with rotating shaft, whereby locking catch is created as a device securing from above, or from below. The nature is that the hook of the locking catch, created for securing from below, is erected upwards and a cut-out for fitment of the holder pin is U shaped.

[0011] The nature also is that the locking catch is through the draw-bar and the lever with the socket connected with the rotating shaft adjustably.

[0012] The nature is that the locking catch, which is connected through the socket, lever and the draw-bar to the rotating shaft, fixes with its body the sliding sidewall against the wagon frame. During closing of the sidewall, and by that also during rotating of the shaft, the sidewall, through the locking catch hook, will be locked, and during opening, the side wall will be unlocked.

[0013] Mechanism can be manufactured from any suitable material regarding strength. Mechanism does not require any additional activities, nor does it complicate operation of mechanism of opening and closing of the sidewall.

[0014] Method of sidewall closing is different as in the other known mechanisms. New mechanism for securing of the sidewall of the freight railway wagons type Habbiins differs from the known methods mainly in the way that:

- for adjustment of the mechanism, there is used a socket adjustably fulcrumed on the shaft

- the sidewall holder is equipped with a lock pin that holds the hook of the locking catch
- the locking catch can be created to secure from above, or to secure from below

Review of pictures in the drawings

[0015] The pictures shows two variants of sidewall securing, namely variant 1 — securing of the sidewall from above, and variant 2 — securing of the sidewall form below. Securing of the sidewall from above is depicted in the pictures 1-5, whereby in the picture no. 1, there is showed locked sidewall with marked position of individual parts of the mechanism, in the picture no. 2, there is unlocked sidewall, in the picture no. 3, there is a detail of locking catch, picture no. 4 - detail of lever and in the picture no. 5, there is a detail of the draw-bar. Securing of the sidewall from below is depicted in the pictures 6-10, whereby in the picture no. 6, there is showed locked sidewall, in the picture no. 7 - unlocked sidewall, in the picture no. 8 - detail of locking catch, picture no. 9 - detail of lever and in the picture no. 10, there is a detail of the draw-bar.

Examples of execution

Example 1

[0016] Mechanism for securing the sidewall of the freight railway wagon from above (variant no. 1) was used in the wagon type Habbiins and Habbiillns (bogie four-axle wagon without partition walls and with partition walls).

[0017] Mechanism for securing of the sidewall consists of a locking catch 1 (picture no. 3) and a lever 2 (picture no. 4) with a socket 3, whereby 1 and 2 are connected by means of a draw-bar 4 (picture no. 5). The lever 2 is through the socket 3 adjustably connected with a rotating shaft 6 and the locking catch 1 fits from above into the opening of a holder 5 firmly connected with the sidewall and it traps a holder pin 5. During closing of the sidewall with the holder 5, and by that also during rotating of the shaft 6, there occurs, through the lever 2 and draw-bar 4, rotation of the locking catch 1, which fits from above into the opening of the holder 5 and fixes pin of the holder 5, and by that also the sidewall against the wagon frame. Thereby, the sliding wall will be automatically locked.

[0018] Mechanism can be adjusted by simple releasing of bolts of the socket 3, by its rotating with the lever 2 by corresponding angle around the axis of the rotating shaft 6 and by tightening of the bolts of the socket 3. By this method, the correct functionality of the mechanism for securing of the sidewall from above is provided, and by that, there is provided also stability of the sliding sidewall during running of the wagon.

[0019] This mechanism is installed alongside the railway wagon repetitively.

Example 2

[0020] Mechanism for securing the sidewall of the freight railway wagon from above according to the variant no. 1 can be used in the wagon type Hbbins, two-axle wagon without partition walls, or in the wagon type Hbbillns, two-axle wagon with partition walls, with the same method of securing the sidewall towards the cross clearance.

Example 3

[0021] New mechanism for securing the sidewall of the freight railway wagon from below (variant no. 2) was used in the wagon type Habbiins and Habbiillns (bogie four-axle wagon without partition walls and with partition walls).

[0022] This mechanism for securing of the sidewall consists of a locking catch 1 (picture no. 8) and a lever 2 (picture no. 9) with a socket 3, whereby 1 and 2 are connected by means of a draw-bar 4 (picture no. 10). The lever 2 is through the socket 3 adjustably connected with a rotating shaft 6 and the hook 1.1 of the locking catch, erected upwards, fits from below into the opening of a holder 5 firmly connected with the sidewall and it traps a holder pin 5 in the U shaped cut-out 1.2 of the locking catch 1. During closing of the sidewall with the holder 5, and by that also during rotating of the shaft 6, there occurs, through the lever 2 and draw-bar 4, rotation of the locking catch 1, which fits from below into the opening of the holder 5 and fixes pin of the holder 5, and by that also the sidewall against the wagon frame. Thereby, the sliding wall will be automatically locked.

[0023] Mechanism can be adjusted by simple releasing of bolts of the socket 3, by its rotating with the lever 2 by corresponding angle around the axis of the rotating shaft 6 and by tightening of the bolts of the socket 3. By this method, the correct functionality of the mechanism for securing of the sidewall from below is provided, and by that, there is provided also stability of the sliding sidewall during running of the wagon.

[0024] This mechanism is installed alongside the railway wagon repetitively.

Example 4

[0025] Mechanism for securing the sidewall of the freight railway wagon from below according to the variant no. 2 can be used in the wagon type Hbbins, two-axle wagon without partition walls, or in the wagon type Hbbillns two-axle wagon with partition walls, with the same method of securing the sidewall towards the cross clearance.

Industrial efficiency

[0026] Mentioned mechanism can be used in various types of covered freight railway wagons with sliding side-

walls, among which belongs bogie four-axle wagon without partition walls (Habbiins), bogie four-axle wagon with partition walls (Habiillns), bogie two-axle wagon without partition walls (Hbbins), two-axle wagon with partition walls (Hbbillns), and in principle, it is possible to secure any sliding sidewall that uses for opening a rotating shaft.

List of related marks

[0027]

1 locking catch

1.1 hook

1.2 cut-out

2 lever

3 socket

4 draw-bar

5 sidewall holder

6 rotating shaft

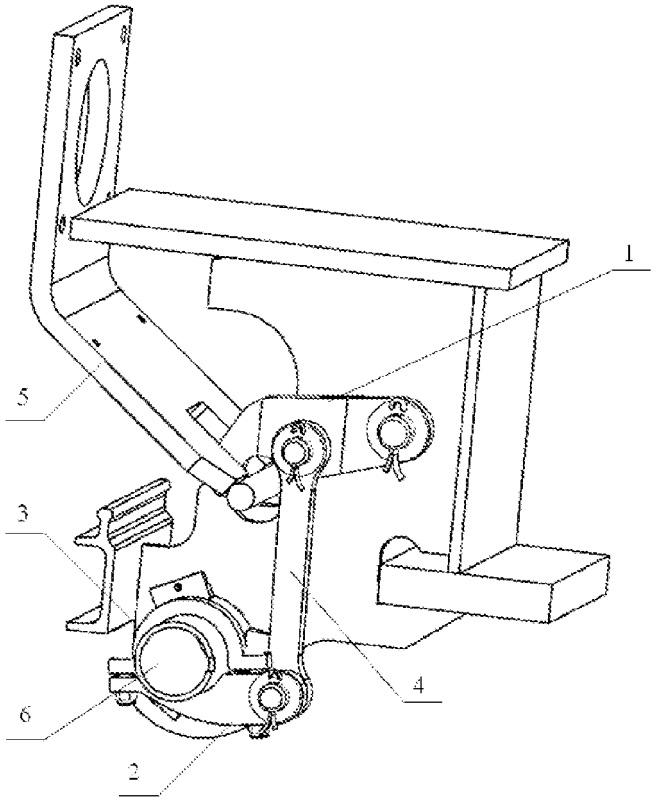
Claims

1. Mechanism for locking of the sidewall of freight railway wagon, which consists of the locking catch (1), connected through the draw-bar (4) with the lever (2) equipped with the socket (3).

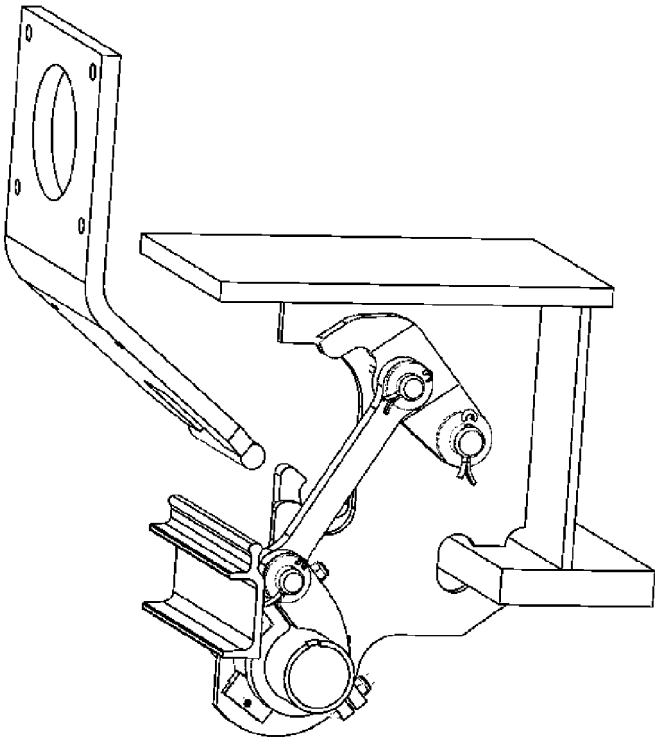
2. Mechanism for locking of the sidewall of freight railway wagon as claimed in claim 1, wherein locking catch (1) is created to secure the sidewall from above, or from below.

3. Mechanism for locking of the sidewall of freight railway wagon as claimed in claim 1, wherein the hook (1.1) of the locking catch is erected upwards and the cut-out (1.2) of pin holder (5) seating is U shaped when securing from below.

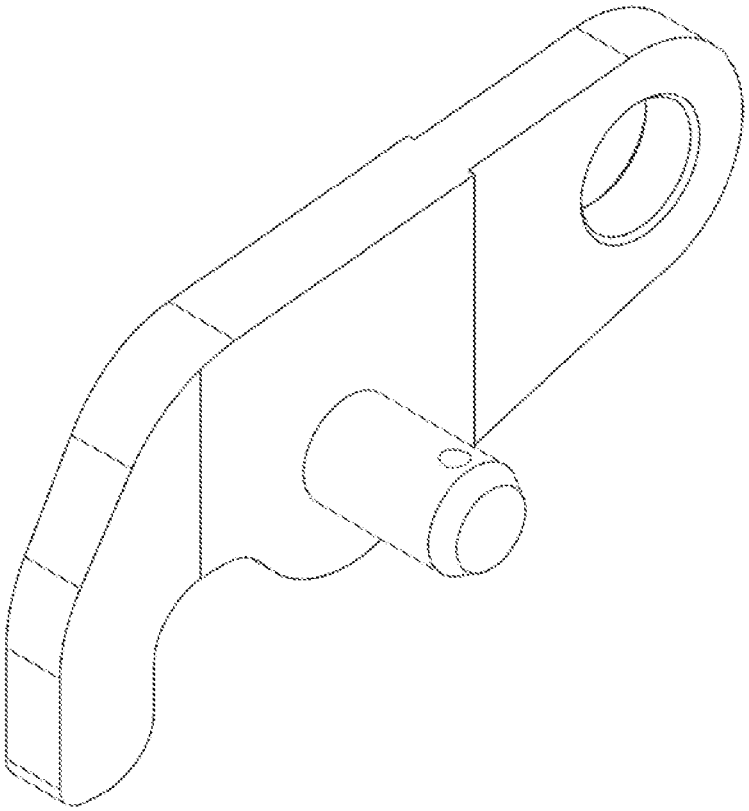
4. Mechanism for locking of the sidewall of freight railway wagon as claimed in claims 1-3, wherein the locking catch (1) is through the draw-bar (4), lever (2) and the socket (3) connected to the rotating shaft (6) adjustably.



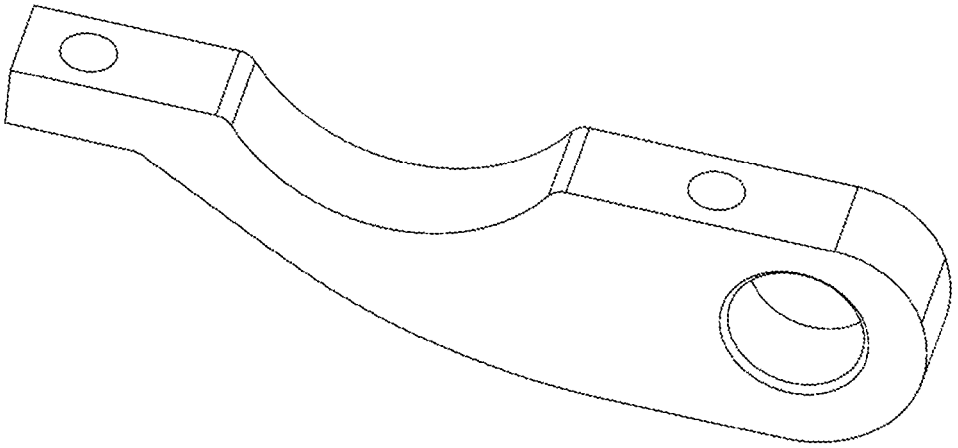
Picture 1 – Locked sidewall



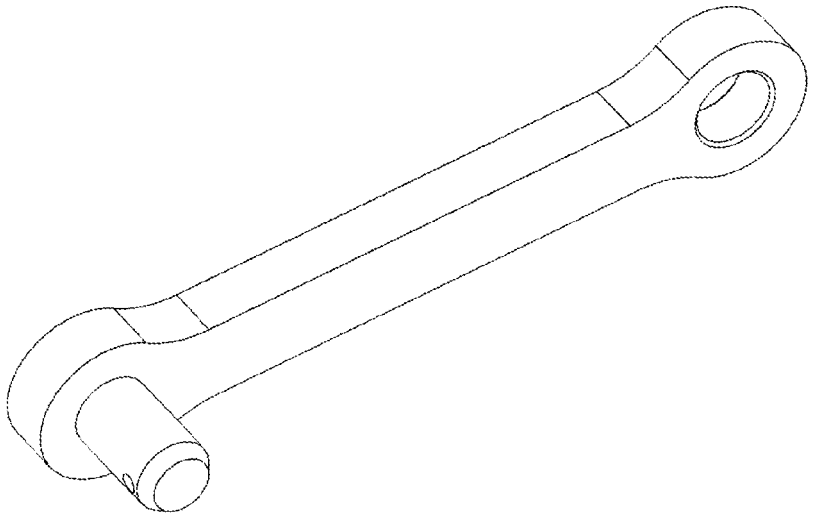
Picture 2 - Unlocked sidewall



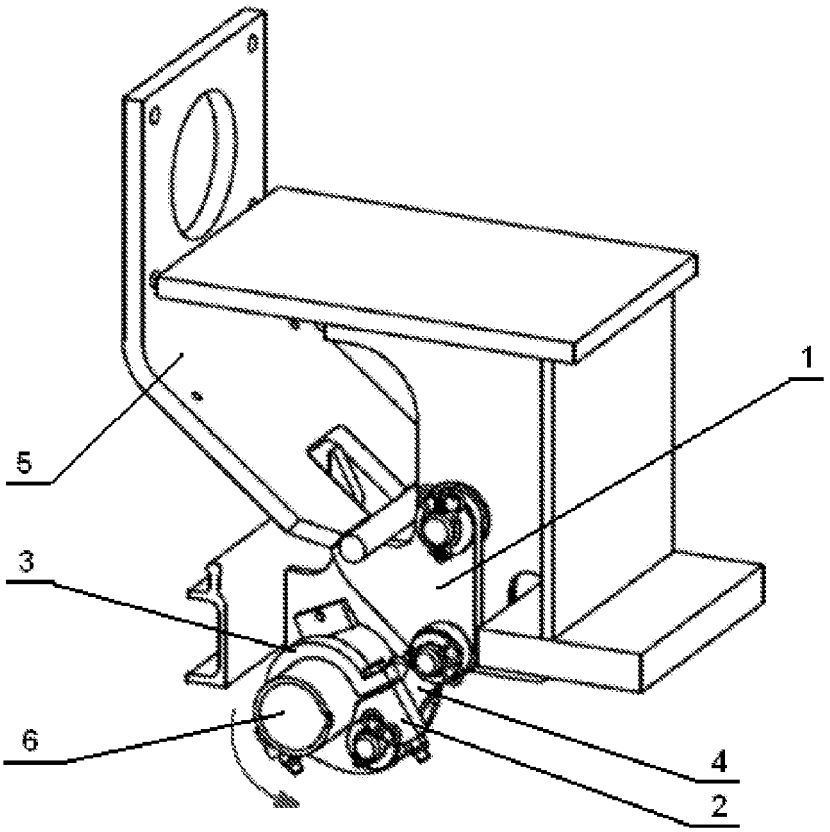
Picture 3 - Locking catch



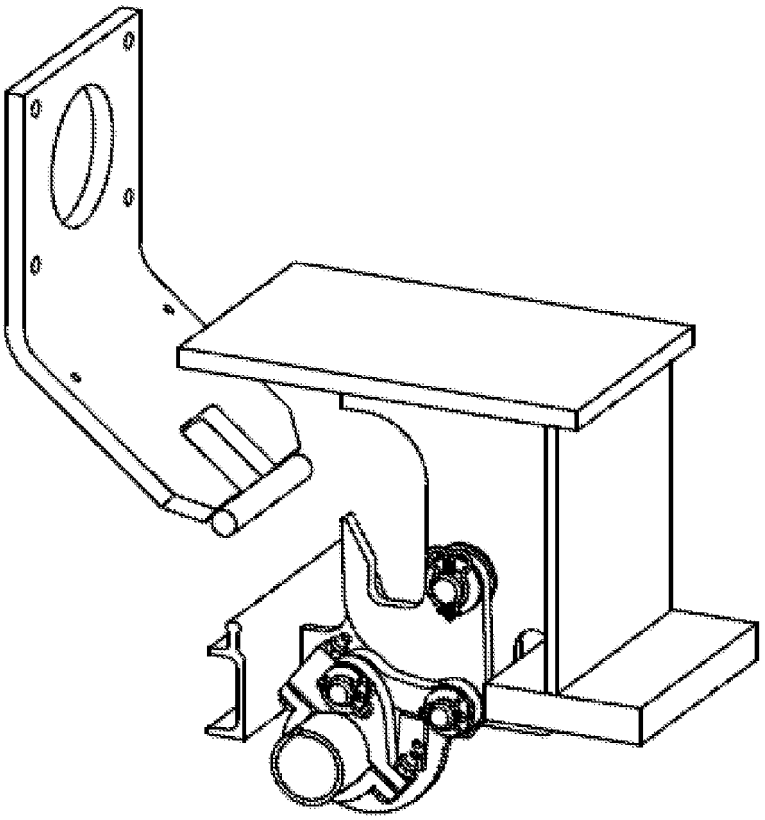
Picture 4 - Lever



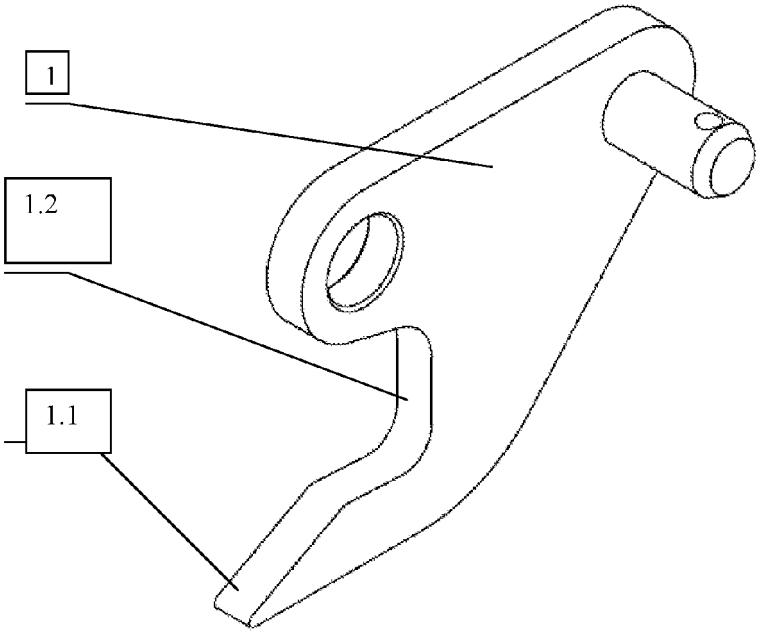
Picture 5 - Draw-bar



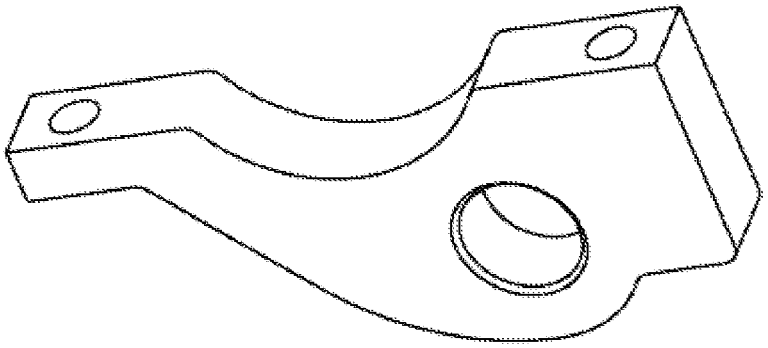
Picture 6 - Locked sidewall



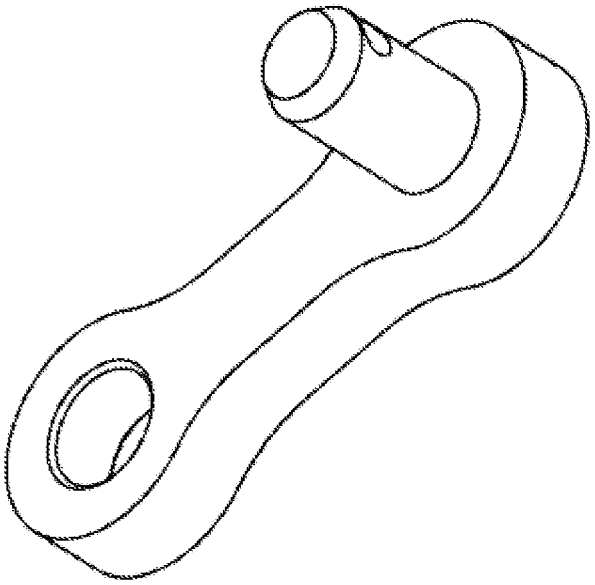
Picture 7 - Unlocked sidewall



Picture 8 - Locking catch



Picture 9 - Lever



Picture 10 - Draw-bar

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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- WO 2006029856 A **[0006]**
- DE 7740233 U1 **[0007]**
- WO 03013934 A1 **[0008]**