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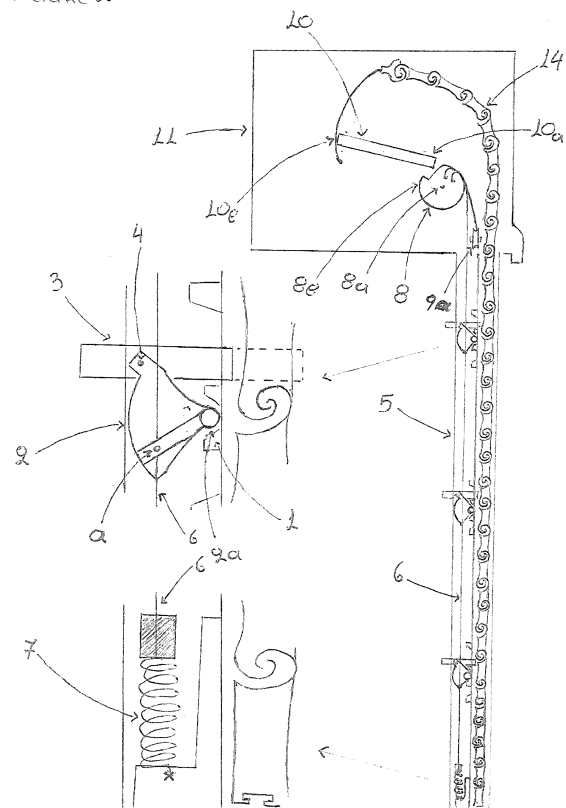
(54) **MULTI-POINT LOCK FOR ROLLER SHUTTER**

(57) Multi-point lock of the roller shutter consisting of the safety guide rail(5) the mounting brackets (1) with the locking mounts (2) on each guide rail, the pins (3) on each base with the bolt (4) for a second shaft, a spring (7) at the end rail of each guide rail, wire (6) for transmission, the starter (10) within the shaft cup, the striker of the starter(8) and finally two rope bases (9 α - 9 β) for transmission under angle.

The roller shutter curtain ends at the end rail of the rolling shutter, the starter is released, the point of the exit of the starter no longer exits, it activates the striker of the starter, it pulls the wire ropes, the ropes rotate the support bases of the pins, the pins make a straight motion and lock the roller starter curtain. The unlocking is made by the springs pulling back the wire ropes when the starter enters the shaft mug.

The advantage of this invention is that human intervention is not necessary to lock or unlock the roller shutter.

FIGURE 2



Description

[0001] This invention is referring to the multi-point lock of the rolling shutter consisting of the support bases with locking mounts on each guide rail, the pins on each base, a spring at the end rail of each guide rail, wire rope for transmission, the starter in the shaft cup, the striker of the starter and finally two rope bases for the angular drive. Locks of this type are not well-known.

[0002] Using this lock allows you to manipulate the roller shutter by remote control or by wall switch without having to lock and unlock the rolling shutter manually

[0003] The multi-point lock according to the present invention features locks in multiple points on each side of the rolling shutter but at the same time the whole process of locking - unlocking is done from the motion of the motor and not from human intervention.

Footnote:

Numbers (1 to 10) are parts of the invention

[0004] The numbers (11 to 15) are parts (materials) conforming to the invention, are widely found in the market and their numbering will help understanding the scope of the invention. The numbering from the Greek alphabet indicates points on the field, e.g. (a) or points on the parts of the invention e.g. (8 α) (8 β) etc. ;

[0005] The support brackets (1) [cf. Figure 2] hold the locking bases (2) [Figure 2] which rotates along the shaft (2 α) [Figure 2] and hold the pin (3) [Figure 2] with a screw (4) [Figure 2], which in turn plays its role of the second shaft in the guide rail(5) [Figure 1], the linear movement of the pin (3) is achieved. The result of this movement is the lock-unlocking of the rolling shutter

[0006] The wire ropes (6) [Figure 2] simultaneously convey the motion from the guide rail(5) to the top of the rolling shutter, in the box (11) [Figure 2], and they (6) are always stretched and create the unlock command thanks to the springs (7) [Figure 2] at the bottom of the guide rail (5).

[0007] It should be noted that the locking bases (2) have a fixed point (a) [Figure 2] on the wire rope (6), the wire rope (6) is moved and the locking bases (2) follow.

[0008] The two wire ropes (6) respectively, entering the top rolling shutter, in the box (11) [Figure 2] the one that is on the opposite side from the motor (12) [Figure 3] unites directly to the striker of the starter (8) [Figure 2], while the other one that is on the other side of the motor (12) passes through the wire rope base (9 β) [Figure 3] by performing a 360° course in the first to head towards the other rope base (9 α) [Figure 3], which is there in turn performs a 90 degree course upward to reach the striker of the starter(8) [Figure 2 - 3].

[0009] The striker of the starter (8) [Figure 2]. It is a circular base that is rotates along its axis (8 α) [Figure 2] with a missing point from the circle and makes the slot (8b) [Figure 2] for the originator's edge (10) [Figure 2].

The wire ropes (6) are semi circularly attached above in the striker of the starter (8) [Figure 2].

The most important point of this principle invention is the starter (10) [Figure 3].

5 **[0010]** The biggest problem this invention encountered is how the rest of the mechanism recognizes the right time to give the order [locked], since the shaft of the roller shutter 45 makes more than one spin.

10 Problem overrun

[0011] The starter(10) is a base with two springs (10 δ - 10 ϵ) [Figure 3], a point of rotation (10 γ) [Figure 3], the pressure point at the rear (10 β) [cf. Figure 3] and the exit point (10 α) [Figure 3] at the front a part which is located within the shaft cup (13) [Figure 3]

15 **[0012]** The roller shutter curtain of the rolling shutter (14) [Figure 2] is tied and wrapped on the shaft, at least a part of it, throughout the roller shutter curtain movement (14).

20 **[0013]** Except for a specific moment. At the moment the roller shutter curtain (14) of the rolling shutter is completely terminated - unrolled by the shaft. Figure 2]

25 **[0014]** The starter (10) is located throughout the shaft movement (15) [Figure 3], pressed from the roller shutter curtain (14) of the rolling shutter, which is wrapped on the shaft (15), at the pressure point of the starter (10 β) something that, throughout the movement, the output point of the starter(10 α) is inside the cup (13) and does not activate anything, [is idle] The only moment when the roller shutter curtain (14) of the rolling shutter is terminated, [absolutely unrolled by the shaft] (15), i.e. it has closed the entire surface of the window, it is the right time to lock the mechanism.

30 **[0015]** The starter(10) is released, the output point of the starter(10 α) protrudes now, it triggers the striker of the starter(8), it pulls the wire ropes (6), the wire ropes (6) rotate the support pins (2), the pins (2) make a rectilinear motion and lock - secure the roller shutter curtain(14) of the rolling shutter

35 **[0016]** On unlocking, the shaft (15) rotates backwards (i.e., gathers the mat) (14) of the roller shutter] the starter (10) is pressed at the pressure point (10b), the output point of the starter(10a) enters the cup (13), the striker of the starter(8) is deactivated [ie it releases the wire ropes (6)], the wire ropes (6) which are always stretched by the springs (7) at the end rail of the drivers (5) [meaning that something always pulls them, so they can do the reverse motion] reversing motion and reset the locking mounts (2) in their original position, which in turn pulls the pins (3) to the rear and unlock the roller shutter.

40 **[0017]** It should be noted that the command "lock" is a moment on the full rotation of the shaft (15) [when the output of the starter(10 α) finds the striker(8)], meaning that the roller shutter curtain(14) of the rolling shutter that gives the command at the starter's pressure point (10 β) has a time difference with remaining mechanism [almost a full rotation] which is a lot important because it leaves

the mechanism room to react, [it is not instantaneous motion] and plus it easily adapts to the irregular dimensions of the roller shutter curtain (14) of the rolling shutter.

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Claims

The multipoint lock consists of the a special guide rail (5) with a characteristic of the additional inner chamber, which creates the appropriate conditions for the mechanism to operate. 10

The set of objects: supports (1), locking bases (2), bolts (3), screw (4), create an independent locking on the guide rail and is **characterized by** the ability to receive a command perpendicular to it [up and down] and to perform horizontal movement [in - out] or otherwise [locked - unlocked]. 15

The set of objects: starter (10), the roller shutter curtain of the starter(8), which is also the most important part of the invention, and is **characterized by** the ability to select through the number of turns of a rolling shutter shaft, in the appropriate time that will give the command locked [mechanically]. 20 25

All objects: wire rope (6), rope bases (9 α - 9 β), a spring (7) which is characteristic not only of carrying commands [locked - unlocked] from the shaft to the drivers but also that they have primary and permanent command "unlocked" throughout the roller shutter curtain move 20 of the rolling shutter, except for the only time the starter10) gives the command "locked". 30

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The multi-point lock of the roller shutter acts as a whole of the above claims, with the exception of claim (2), which has the additional feature of being used in the mechanism, more than once meaning the locks that are determined and if the dimensions of his drivers rolling shutter allow it. The claim (2) also derives the name of a multiple point lock. 40

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FIGURE 1

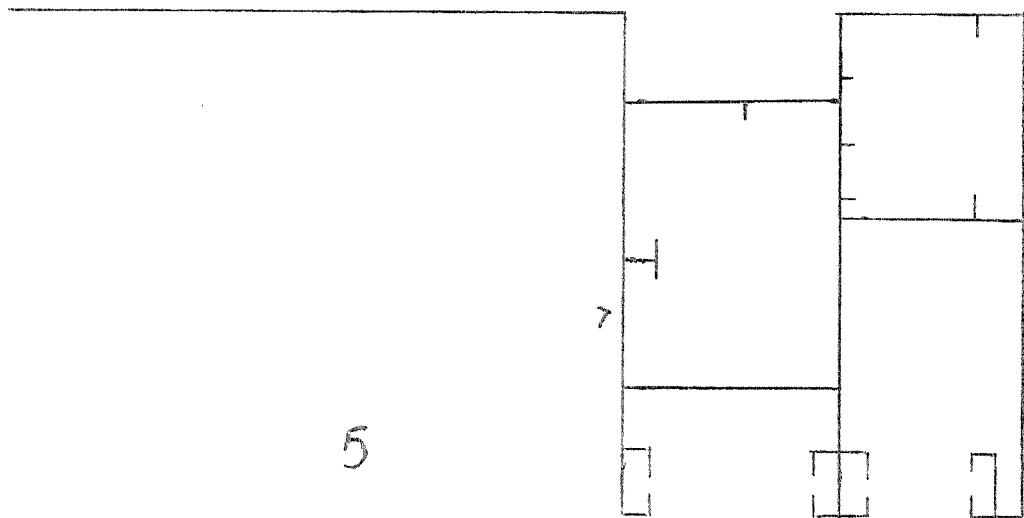


FIGURE 2

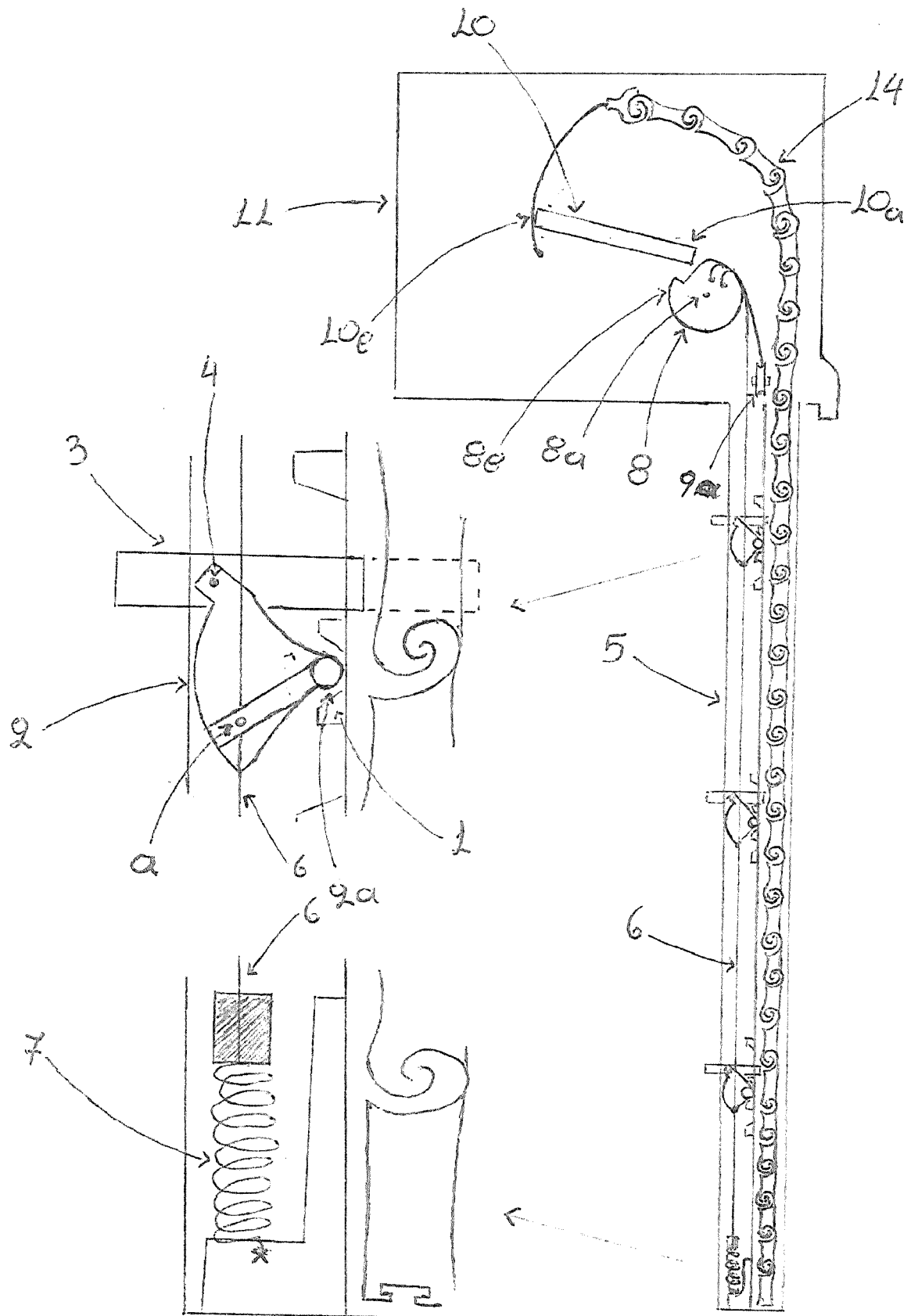
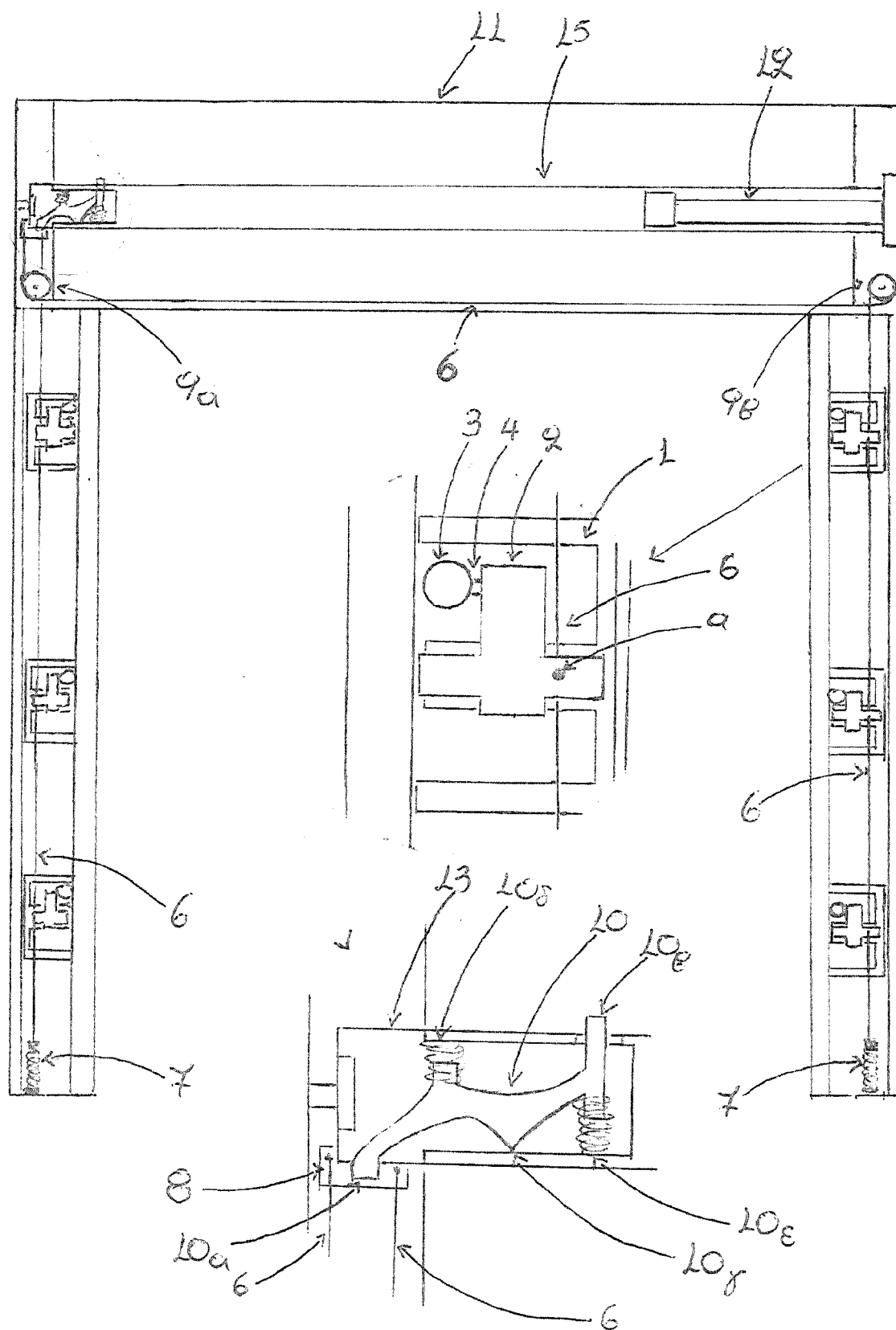


FIGURE 3





EUROPEAN SEARCH REPORT

Application Number
EP 18 38 6012

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| The present search report has been drawn up for all claims | | | |
| Place of search Munich | | Date of completion of the search 4 September 2018 | Examiner Kofoed, Peter |
| 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 | | | |

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 18 38 6012

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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
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04-09-2018

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