

(19)



(11)

EP 2 787 154 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
08.10.2014 Bulletin 2014/41

(51) Int Cl.:
E05C 9/04 (2006.01) E05B 47/00 (2006.01)

(21) Application number: **14000973.9**

(22) Date of filing: **17.03.2014**

(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

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(30) Priority: **05.04.2013 IT TO20130279**

(54) **Lock equipped with anti-theft device supplied/unsupplied through remote control**

(57) A lock (1) is described, equipped with at least one anti-theft device (3) supplied/unsupplied through re-

mote control to block/unlock the lock (1).

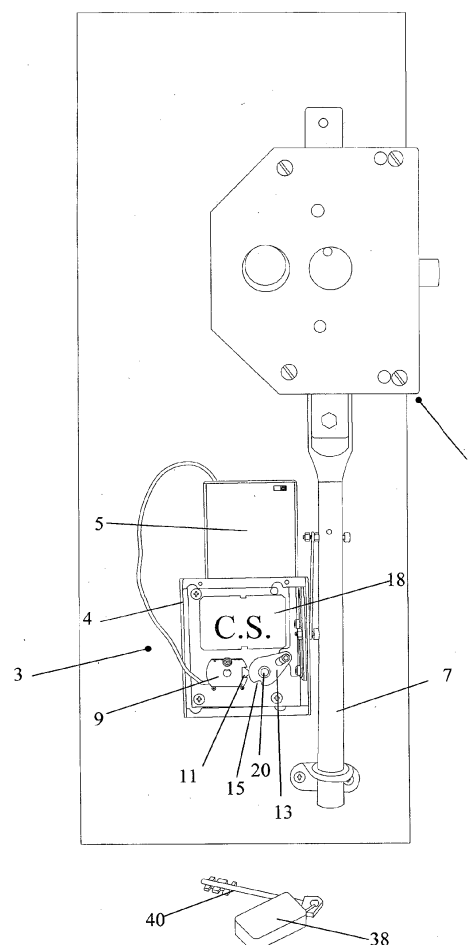


FIG. 1

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Description

[0001] The present invention refers to a lock equipped with anti-theft device supplied/unsupplied through remote control.

[0002] Currently known locks, also of the safety type, are more and more subjected to attacks from thefts, above all aimed to reproduce the keys to open them, in spite of the internal safety mechanisms of the locks or of the particular maps with which such locks are equipped or of the particular configurations of the key driving teeth. The art sees a continuous race between new models of locks with particular keys and new counterfeited keys, which often are actual advanced technological mechanisms capable of being adapted to (and therefore open) any type of lock.

[0003] Object of the present invention is solving the above prior art problems, by providing this time a lock equipped with anti-theft device supplied/unsupplied through remote control, which does not depend on the type of key available and can be applied to any type of lock existing on the market.

[0004] A further object of the present invention is providing a lock as described above, in which the anti-theft device directly operates on the sliding closure bars to which such lock is attached and which are driven to slide by the various rotations of the key: with such solution, once activated, the anti-theft device blocks the sliding of the bars independently from the type of used key.

[0005] Moreover, if the supply batteries get discharged, the lock is not blocked, because the anti-theft device does not operate, while, in case of interruption, even fraudulent, of the electric supply, the device, once active, remains activated due to the presence of autonomous supply batteries.

[0006] The above and other objects and advantages of the invention, as will appear from the following description, are obtained with a lock equipped with anti-theft device as claimed in claim 1. Preferred embodiments and non-trivial variations of the present invention are the subject matter of the dependent claims.

[0007] It is intended that all enclosed claims are an integral part of the present description.

[0008] The present invention will be better described by some preferred embodiments thereof, provided as a non-limiting example, with reference to the enclosed drawings, in which:

- Figure 1 is a front, and partially open, view of a possible embodiment of the lock according to the present invention in its opening position;
- Figure 2 is a view similar to Figure 1 with the lock according to the present invention in its closing position;
- Figure 3 is a detailed view of the anti-theft device shown in Figure 1;
- Figure 4 is a detailed view of the anti-theft device shown in Figure 2; and

- Figure 5 is a view similar to Figure 1 with the anti-theft device assembled upstream of the lock.

[0009] With reference to the Figures, a preferred embodiment of the lock equipped with anti-theft device of the present invention is shown and described. It will be immediately obvious that numerous variations and modifications (for example related to shape, sizes, arrangements and parts with equivalent functionality) can be made to what is described, without departing from the scope of the invention as appears from the enclosed claims.

[0010] According to Figures 1 to 4, the lock 1 of the invention is equipped with at least one anti-theft device 3 supplied/unsupplied through remote control to block/unlock the lock 1 it.

[0011] In particular, the anti-theft device 3, when it is not supplied since it must not operate or in case of discharge of its own supply unit (generally composed of common batteries of the stylus type or equivalent) 5, is operatively connected to the sliding closure bar 7 of the lock 1, allowing it to slide in descent/rise in its closing/opening positions, while, when it is supplied and therefore operated, prevents the sliding of the sliding closure bar 7.

[0012] This type of anti-theft operation is guaranteed because the anti-theft device 3, in a preferred embodiment thereof shown in the Figures, substantially comprises a containing and supporting case 4 inside which the following are placed:

- at least one active latch 9 equipped with at least one fastening tooth 11;
- at least one cam element 13 equipped with at least one engagement recess 15 adapted to operatively engage the at least one fastening tooth 11; moreover, the at least one cam element 13 is operatively connected to the sliding closure bar 7 of the lock 1; and
- at least one electronic circuit 18 for controlling the active latch 9 supplied by the supply unit 5.

[0013] The active latch 9 is commonly a piezoelectric actuator and is used to provide an electromechanical control, and is a normally free block/clutch mechanism, namely without sliding constraints. Its locking is activated by supplying it with a supply unit (like 5), and such supply is remotely driven, for example through a common remote control. When the supply is interrupted due to a pressure of the related remote control key, the active latch 9 goes back to freely slide.

[0014] According to this configuration, in order to be able to operate, the cam element 13 is hinged (in 20) and is equipped with at least one first slit 22 inside which a first pin 24 slides, connected to an elongated element 26 equipped with a pair of second pins 28, 30 sliding in respective second slits 32, 34 placed on one of the side walls of the case 4 of the anti-theft device 3.

[0015] Such second pins 28, 30 are also connected to a rod 36 connected to the sliding closure bar 7 of the lock 1, and allow the sliding of the sliding closure bar 7 as a maximum in its two operating opening and closing positions of the lock 1 (as shown in Figures 1 and 2 and in their respective detailed views of Figures 3 and 4).

[0016] As can also be seen, another feature of the invention is that the anti-theft device 3 can be adapted to be driven by at least one remote control 38, which can be coupled (namely connected, as shown, or adapted to be inserted therein, as known) to a key 40 for opening/closing the lock 1. The remote control 38 can be made in any known way or which will be developed in the future, and drives the anti-theft device 3 through the electronic control circuit 18, for example through a radio, wireless, infrared transmission, or the like.

[0017] Figures 1 to 4 show the situation in which the anti-theft device 3 is connected downstream of the lock 1, namely connected to the lower part (seeing the door from its front and vertically installed, like in the drawings) of the sliding closure bar 7.

[0018] Another feature of the invention is that, if it is possible, the anti-theft device 3 is adapted to be connected to the sliding closure bar 7 also downstream of the lock 1 (as can be seen in Figure 5) through the single and simple overturning of the cam element 13 inside the containing case, leaving instead unchanged all the other components and their related connections.

[0019] The operation of the anti-theft device 3 of the invention is the following. The fastening tooth 11, when the anti-theft device 3 is not supplied, is adapted to freely slide inside and outside the active latch 9 and to slide on the contact surface of the cam element 13, while, when the anti-theft device 3 is supplied, is adapted to be blocked and does not slide any more as soon as it penetrates inside the engagement recess 15 of the cam element 13, preventing its further movement and blocking the sliding of the sliding closure bar 7.

Claims

1. Lock (1) equipped with at least one anti-theft device (3) supplied/unsupplied through remote control to block/unlock the lock (1), said anti-theft device (3), when it is not supplied since it must not operate or in case of discharge of its own supply unit (5), being operatively connected to a sliding closure bar (7) of the lock (1) allowing the bar (7) to slide in descent/rise in its closing/opening positions, while when it is supplied, preventing the sliding of the sliding closure bar (7), **characterized in that** said anti-theft device (3) comprises:

- at least one active latch (9) equipped with at least one fastening tooth (11);
- at least one cam element (13) equipped with at least one engagement recess (15) adapted

to operatively engage said at least one fastening tooth (11), said at least one cam element (13) being operatively connected to said sliding closure bar (7) of the lock (1); and

- at least one electronic circuit (18) for controlling said active latch (9) supplied by said supply unit (5).

2. Lock (1) according to claim 1, **characterized in that** said cam element (13) is hinged (in 20) and is equipped with at least one first slit (22) inside which a first pin (24) slides, connected to an elongated element (26) equipped with a pair of second pins (28, 30) sliding in respective second slits (32, 34) placed on the side wall of said anti-theft device (3), said second pins (28, 30) being also connected to a rod (36) connected to the sliding closure bar (7) of the lock (1), said second pins (28, 30) allowing the sliding of the sliding closure bar (7) as a maximum in its two operating opening and closing positions of the lock (1).

3. Lock (1) according to claim 1, **characterized in that** said anti-theft device (3) is adapted to be driven by at least one remote control (38) which is adapted to be coupled with a key (40) for opening/closing the lock (1).

4. Lock (1) according to claim 1, **characterized in that** said anti-theft device (3) is adapted to be connected to the sliding closure bar (7) both upstream, and downstream of the lock (1) by overturning said cam element (13).

5. Lock (1) according to claim 1, **characterized in that** said fastening tooth (11), when said anti-theft device (3) is not supplied, is adapted to freely slide inside and outside said active latch (9) and to slide on the contact surface of said cam element (13), while, when said anti-theft device (3) is supplied, is adapted to be blocked and not slide any more as soon as it penetrates inside the engagement recess (15) of the cam element (13), preventing its further sliding and blocking the sliding of the sliding closure bar (7).

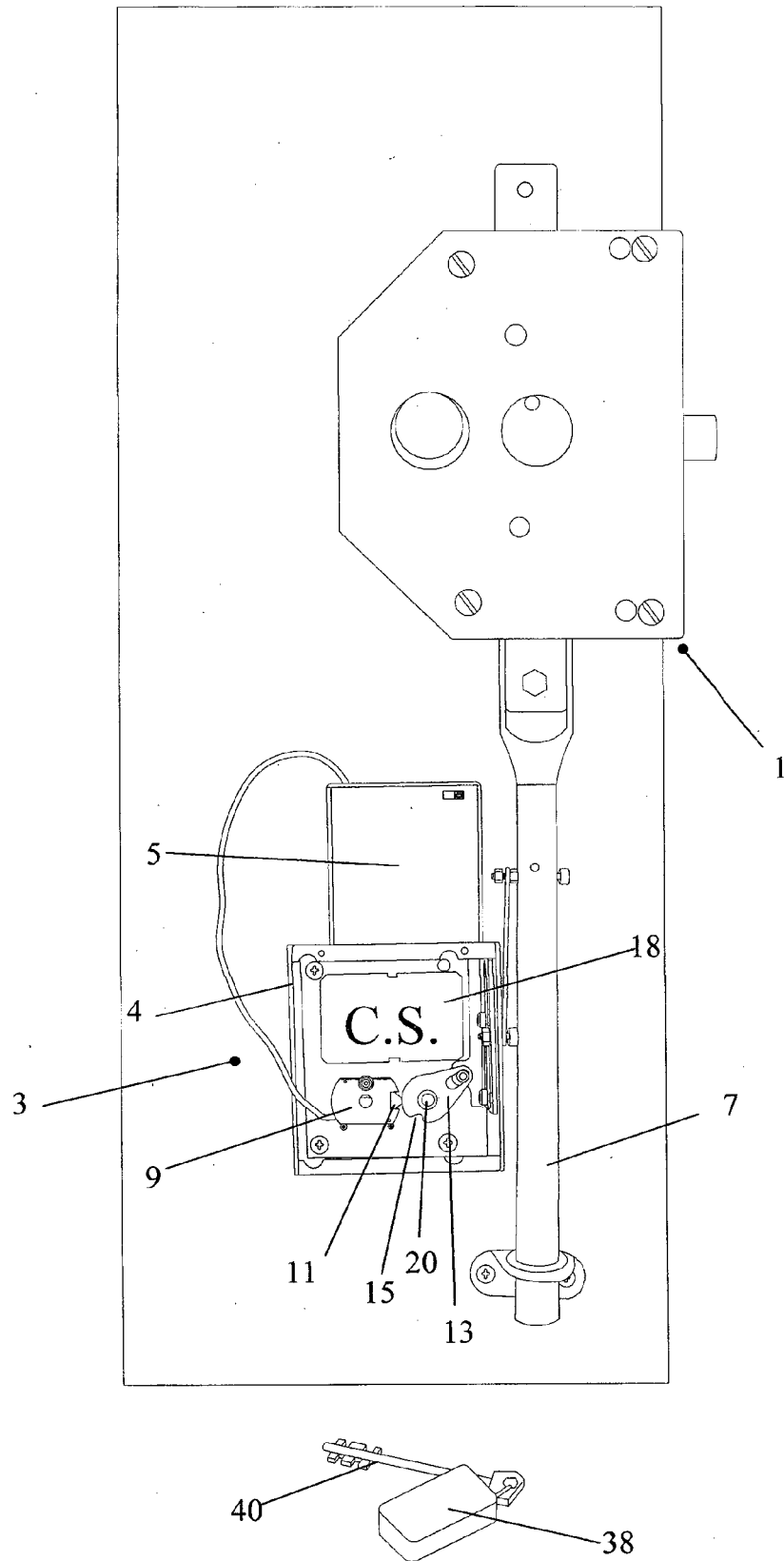


FIG. 1

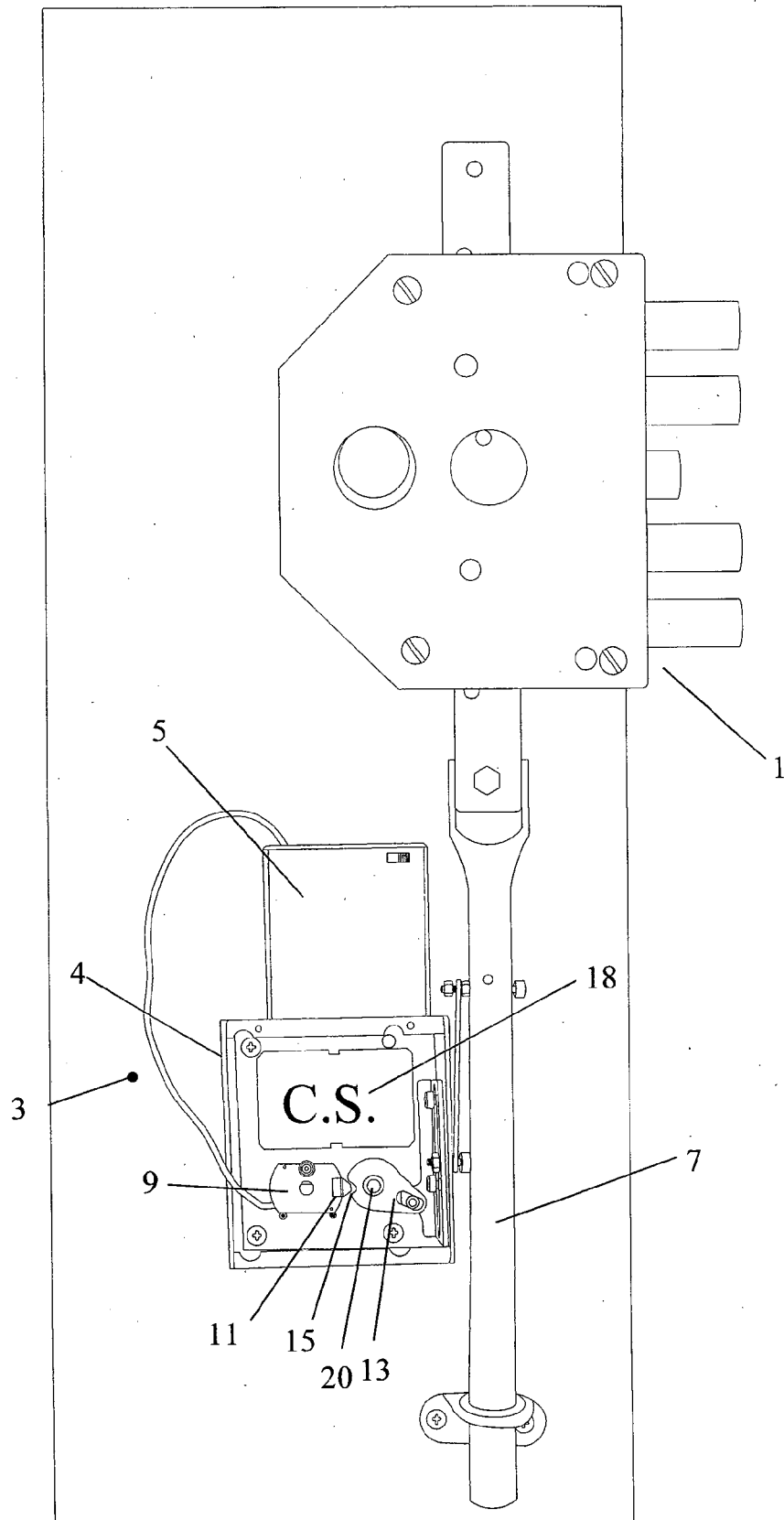


FIG. 2

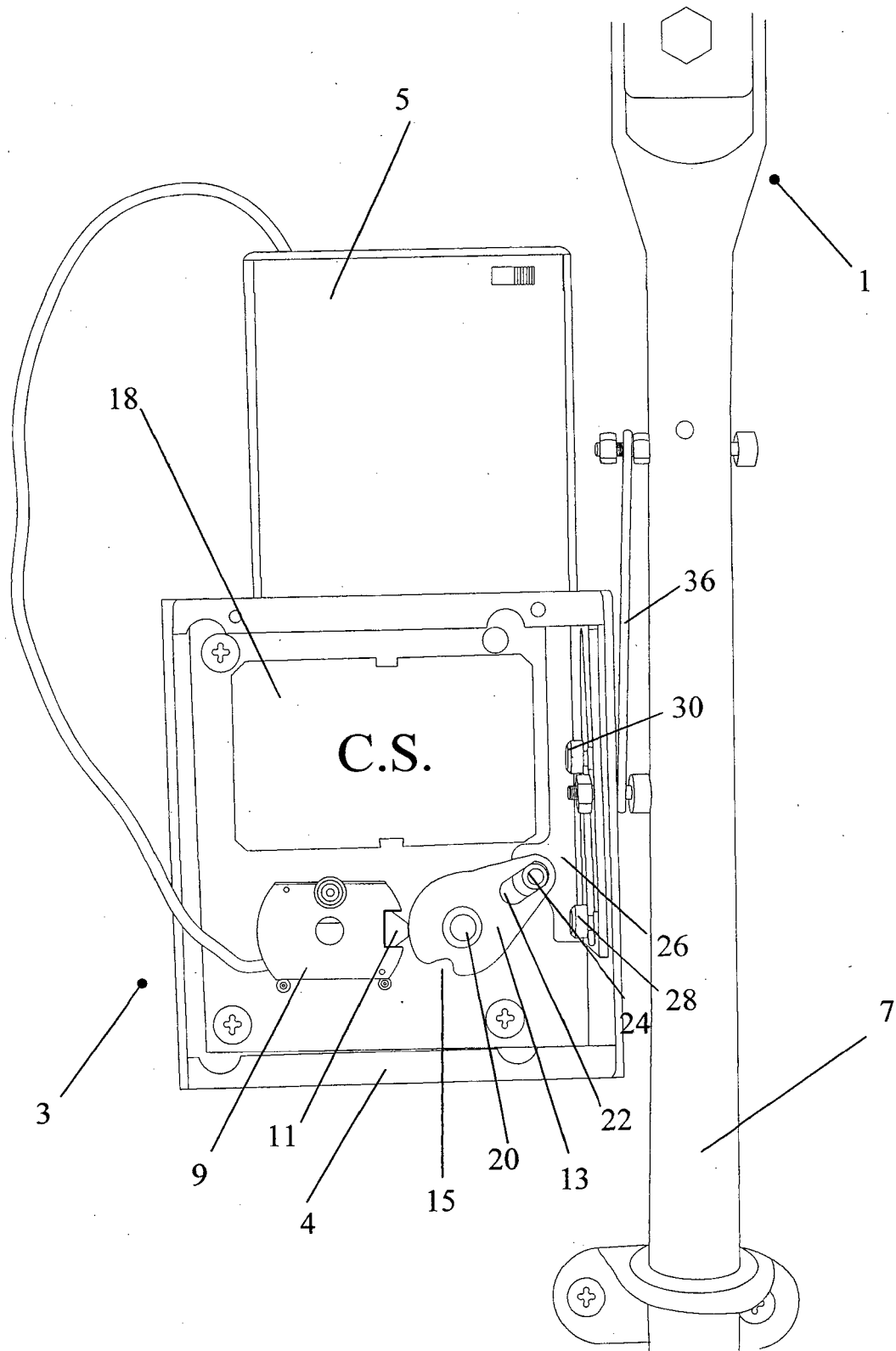


FIG. 3

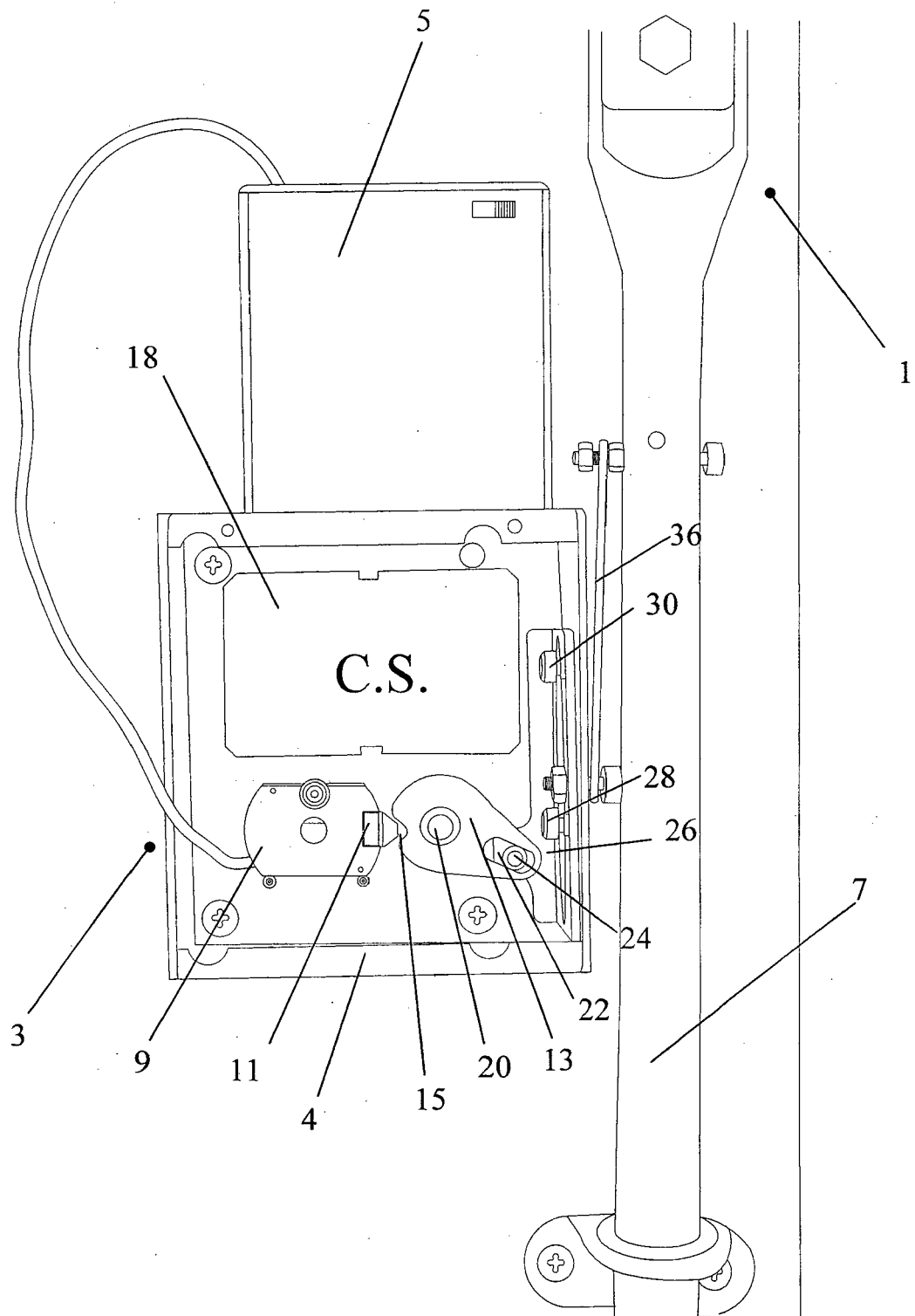


FIG. 4

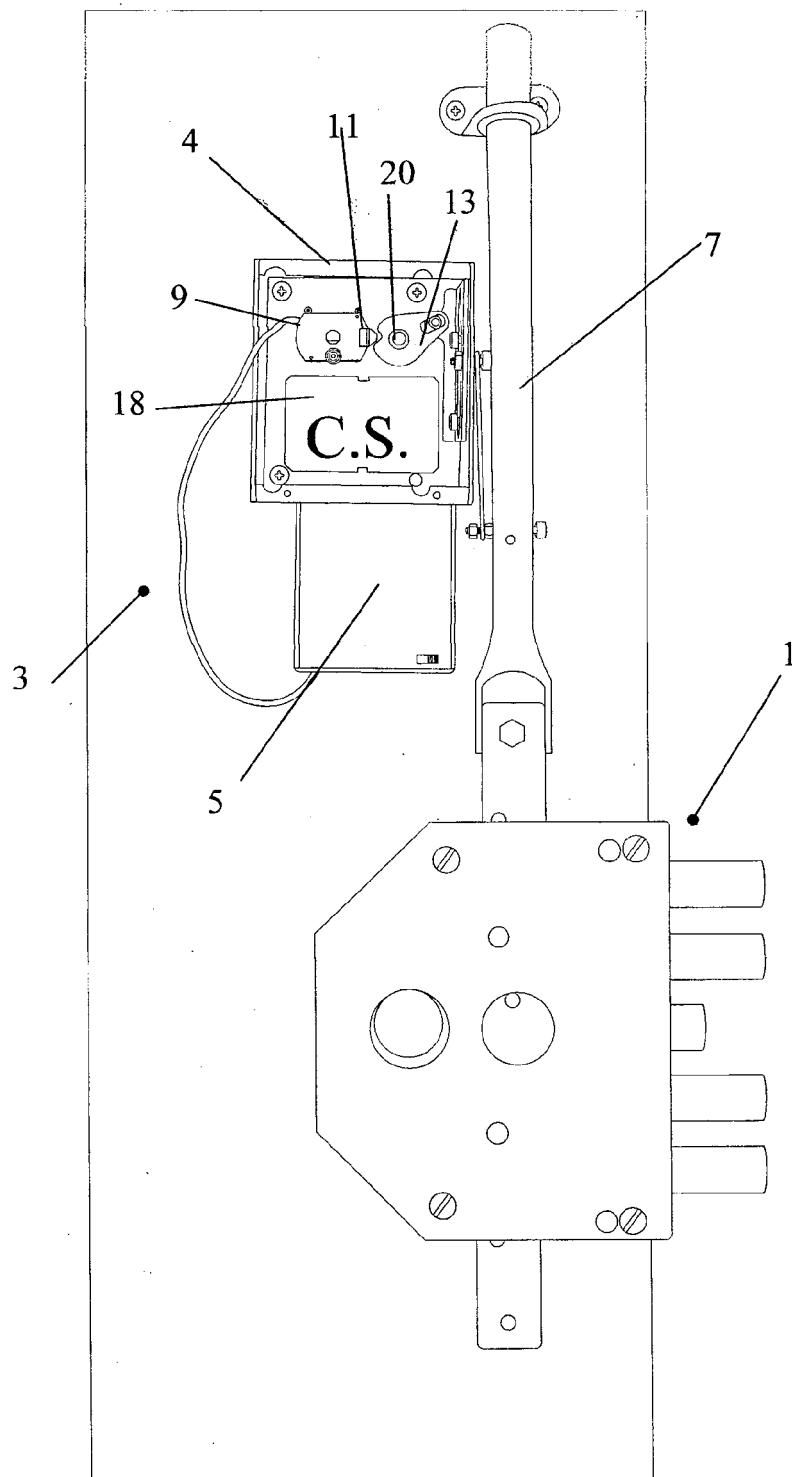


FIG. 5



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EUROPEAN SEARCH REPORT

Application Number
EP 14 00 0973

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		7 May 2014	Geerts, Arnold
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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