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

(11) EP 2 184 425 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.05.2010 Bulletin 2010/19

(51) Int Cl.:
E05B 17/20 *(2006.01)* ***E05B 63/00*** *(2006.01)*

(21) Application number: **09175078.6**

(22) Date of filing: **05.11.2009**

(84) Designated Contracting States:
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 SE SI SK SM TR

(30) Priority: **11.11.2008 FI 20086065**

(71) Applicant: **BJÖRKBODA LAS OY AB**
25860 Björkboda (FI)

(72) Inventors:
- **Nabb, Peter**
  FI-25840, Nivelax (FI)
- **Lindström, Marko**
  FI-25860, Björkboda (FI)

(74) Representative: **Gustafsson, Aulis Valdemar et al**
AWEK Industrial Patents Ltd Oy
P.O. Box 230
FIN-00101 Helsinki (FI)

(54) Lock casing

(57) A lock casing (1) having a bolt (8) that comprises a bolt body (8b) inside the lock casing and a bolt end (8a) that in its locking position protrudes out of a bolt opening (2a) in the lock casing's front plate (2), at least one operating axis (3), transmission means (4, 5, 7, 9) for moving the bolt and means (6, 7, 7b, 9) for deadlocking the bolt. There is a preferably plate-like protective piece between the lock casing (1) and the bolt body (8b), and it is arranged to prevent a tool or similar item to be inserted through the bolt opening (2a) into the lock casing (1) in a position that affects the deadlocking means (6, 7, 7b, 9). The protective piece (10) is supported on the bolt (8) so that it moves together with the bolt (8).

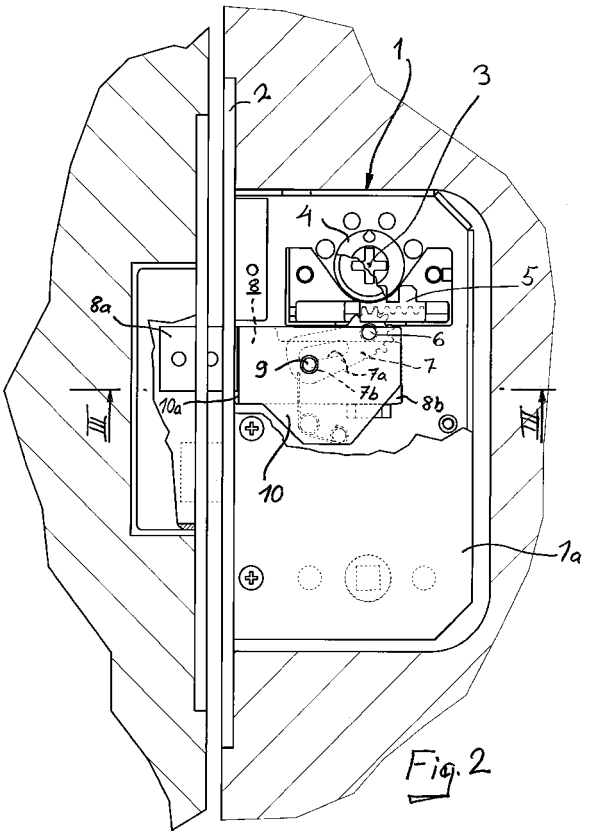


Fig. 2

EP 2 184 425 A1

Description

[0001] The object of the invention is a lock casing according to the preamble of Claim 1.

[0002] In lock casings installed in doors, the bolt in its locked position protrudes out of an opening in the lock casing's front plate into a bolt opening in a counterplate in the door frame. If the bolt cannot be deadlocked, one may attempt to move the bolt into the lock casing using a tool or similar item inserted between the door frame and the door. This is not possible if the bolt is deadlocked. In this case, however, one may attempt to insert a fairly thin tool or similar item into the lock casing through the bolt opening in the front plate and the gap between the bolt and its opening with the intention of manipulating the deadlocking means to release deadlocking. Even though said gap is often fairly narrow, the possibility of manipulating the deadlocking means cannot be completely excluded, depending on the actual structure and mutual placement of the lock casing components.

[0003] The objective of the invention is to create a solution for eliminating the problem described above. A particular objective of the invention is to create a structurally simple and low-cost solution that can also be easily installed in most existing lock casings as necessary.

[0004] The objectives of the invention will be achieved substantially in the way presented in Claim 1 and in more detail in the other claims. According to the invention, there is a preferably plate-like protective piece between the lock casing and the bolt body, which is arranged to prevent a tool or similar item to be inserted through the bolt opening into the lock casing in a position that affects the deadlocking means. The protective piece is supported on the bolt so that it moves together with the bolt. This provides a simple and reliable solution.

[0005] When the protective piece is supported on a pin or similar in the bolt, the structure of the lock casing can be kept as simple as possible because the bolt usually has such a pin for controlling the bolt's movement in relation to the lock casing.

[0006] The end of the protective piece facing the bolt opening has a control edge arranged to steer any tool or similar item inserted through the bolt opening into the lock casing away from the deadlocking means. Furthermore, the end of the protective piece facing the bolt opening is bent towards the bolt body. Thus the protective piece can be advantageously used for covering the transmission and deadlocking means in the lock casing in accordance with the actual structure of the lock casing, preventing the possibility to use various tools.

[0007] In the following, the invention will be described by way of example through reference to the enclosed schematical drawings, in which

- Figure 1 illustrates an embodiment of a lock casing according to the invention, installed in a door and viewed from the side without a protective piece preventing manipulation of the bolt,
- Figure 2 illustrates the lock casing of Figure 2 fitted with a protective piece preventing manipulation of the bolt,
- Figure 3 illustrates the cross-section III - III of Figure 2, and
- Figure 4 illustrates the protective piece and its installation in more detail.

[0008] In the drawings, reference number 1 refers to a lock casing that is installed in a cutout made in a door or similar in a way known as such. The lock casing 1 comprises a housing part 1a and a front plate 2. The lock casing 1 has an operating axis 3 on which a key cylinder can be installed on the outside of the door, or a knob or similar actuator can be installed on the inside of the door (not illustrated). A follower 4 is also installed on the operating axis 3 and it is turned using said key cylinder or actuator, and force is transmitted using toothed transmission elements 5 and 7 to a bolt 8.

[0009] The bolt 8 comprises a bolt end 8a, which in the position illustrated in Figures 1 to 3 protrudes through the bolt opening 2a in the front plate 2 into a bolt opening in the door frame, preventing the door from being turned in relation to the door frame. The bolt 8 also comprises a bolt body 8b located in the housing part of the lock casing 1, which bolt body is fitted with a pin 9 that is guided by the housing part 1 a and correspondingly guides the movements of the bolt 8.

[0010] The transmission element 7 is pivotably supported on a pin 6 in the lock casing and comprises a control groove 7a that cooperates with the pin 9 on the bolt to move the bolt 8. The control groove 7a has a counter surface 7b which, in the situation illustrated in Figures 1 to 3, together with the pin 6 provides deadlocking of the bolt, preventing the bolt 8 from being pressed into the lock casing 1, 1 a.

[0011] As can be concluded from Figures 1 to 3, pushing the transmission element 7 that serves also as a deadlocking means downward in the Figures causes the release of deadlocking, in which case the pin 9 is allowed to move along the control groove 7a while the bolt 8 is pushed into the lock casing. Even though the gap between the bolt 8 and the bolt opening 2a can be quite narrow, one cannot completely exclude the possibility of attempting to insert a thin tool or similar item between the door and the frame through said gap into the housing part 1a of the lock casing, with the intention of releasing the deadlocking and allowing the bolt 8 to be pushed into the lock casing. To prevent this, the lock casing is fitted with a plate-like protective piece 10 that covers the elements within the lock casing 1 that provide deadlocking of the bolt 8, thus preventing any attempts of manipulating said elements.

[0012] The protective piece 10 is supported on the pin 9 in the bolt by means of an opening 10c. Thus the protective piece 10 will continuously move with the move-

ment of the bolt 8. The front end 10b of the protective piece is bent and supported directly on the bolt body 8b, and the bend thus created serves as a control edge 10a that steers any tools inserted into the lock casing away from the deadlocking means.

[0013] The solution according to the invention, which prevents manipulation of the bolt, is not dependent on the implementation of force transmission from the operating axis to the bolt and actual deadlocking of the bolt; for example, whether deadlocking is provided by the transmission means that also serve partially as deadlocking means, or whether some separate piece independent from the actual transmission providing the bolt movements is used, because in any case, the basic purpose is to sufficiently cover any elements that could be manipulated, so that they cannot be moved with tools. The solution according to the invention is also independent on whether the lock casing has more than one operating axis.

[0014] The structure of the protective piece can be simple and thin. Since it can be simply supported on a pin in the bolt that is also used for moving the bolt and providing deadlocking action, the structure of the solution is low-cost and in most cases suitable also for existing lock casings.

[0015] Thus the invention is not limited to the presented embodiment but several variations can be conceived within the scope of the attached claims.

Claims

1. A lock casing (1) having a bolt (8) that comprises a bolt body (8b) inside the lock casing and a bolt end (8a) that in its locking position protrudes out of a bolt opening (2a) in the lock casing's front plate (2), at least one operating axis (3), transmission means (4, 5, 7, 9) for moving the bolt and means (6, 7, 7b, 9) for deadlocking the bolt, **characterised in that** there is a preferably plate-like protective piece (10) between the lock casing (1) and the bolt body (8b), said protective piece (10) being arranged to prevent the insertion of a tool or similar item through the bolt opening (2a) into the lock casing (1) in a position that affects the deadlocking means (6, 7, 7b, 9), and **in that** said protective piece (10) is supported on the bolt (8) so that it moves with the bolt (8).

2. A lock casing according to Claim 1, **characterised in that** the protective piece (10) is supported on a pin (9) or similar in the bolt.

3. A lock casing according to Claim 1 or 2, **characterised in that** the end of the protective piece (10) facing the bolt opening (2a) has a control edge (10a) arranged to steer any tool or similar item inserted through the bolt opening (2a) into the lock casing (1) away from the deadlocking means (6, 7, 7b, 9).

4. A lock casing according to any one of the above claims, **characterised in that** the end of the protective piece (10) facing the bolt opening (2a) is bent (10b) towards the bolt body (8b).

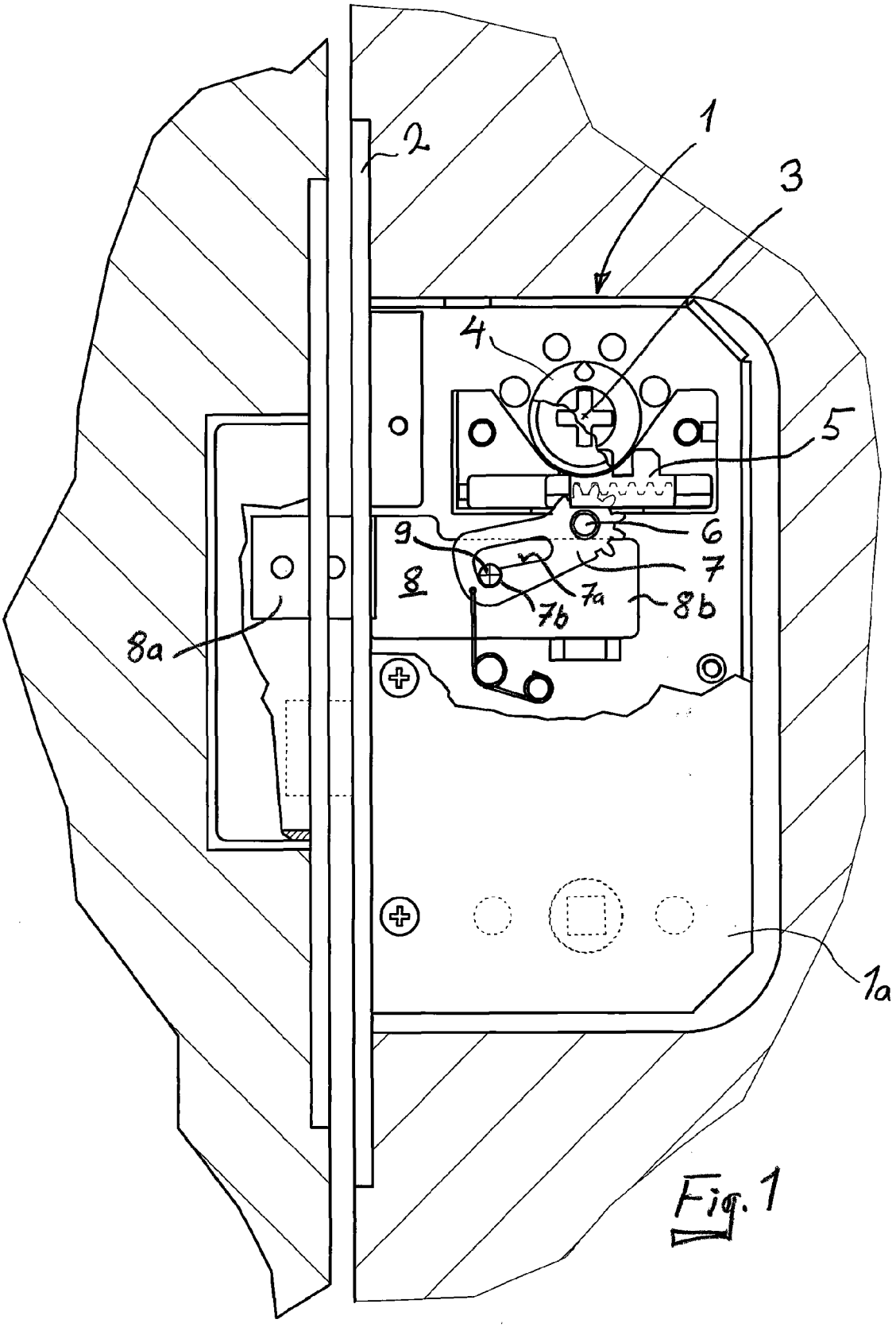


Fig. 1

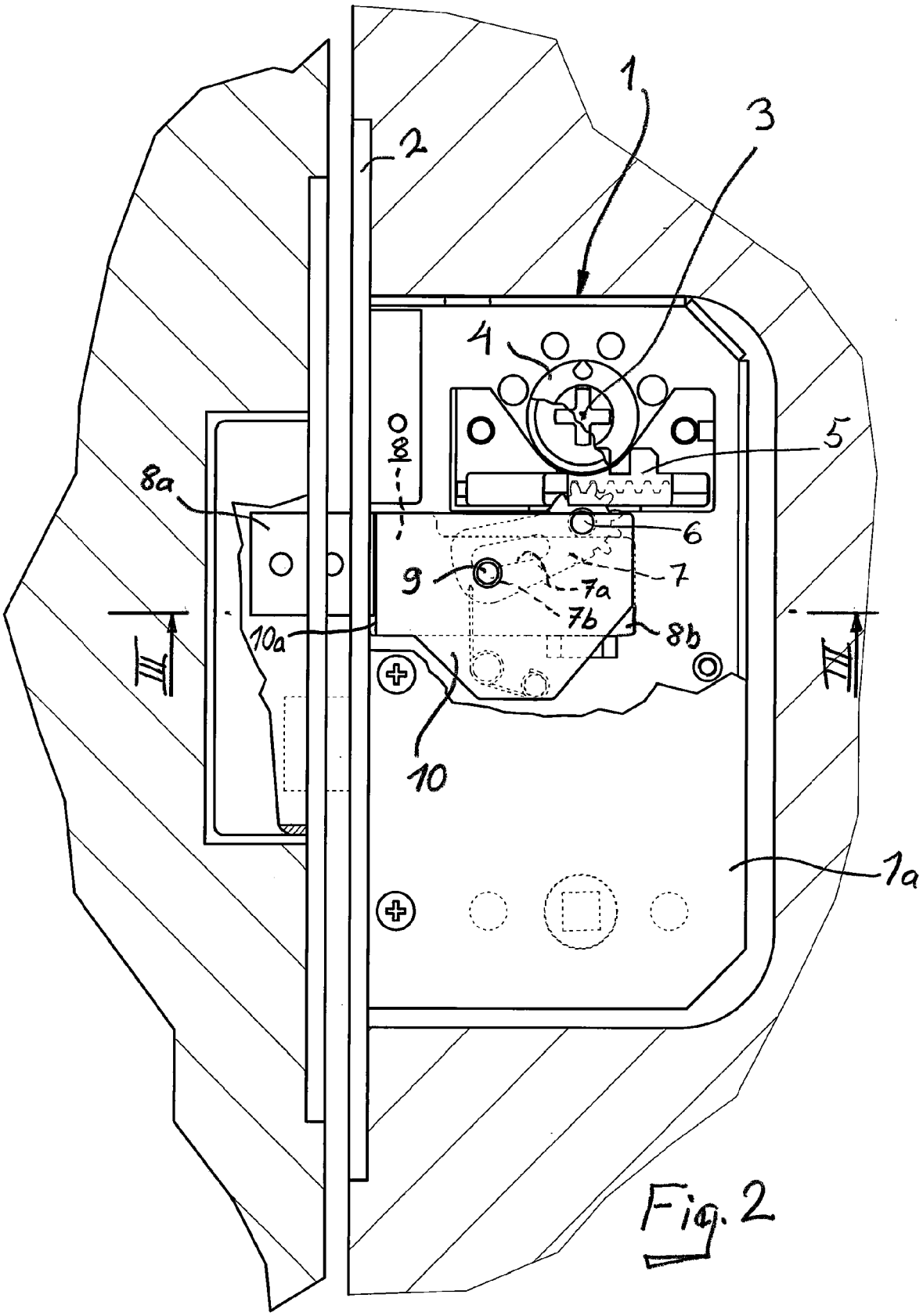
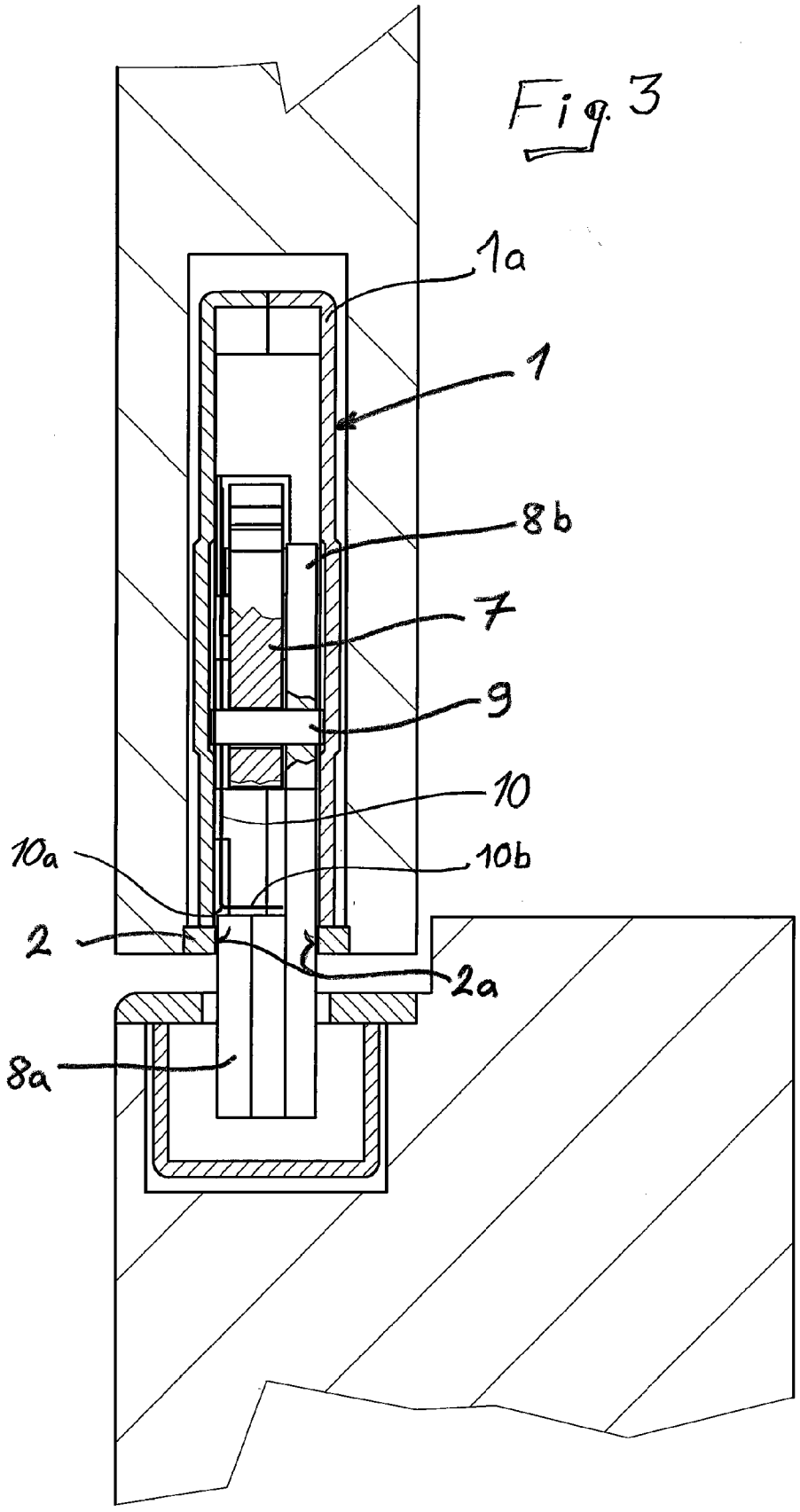


Fig. 2

Fig. 3



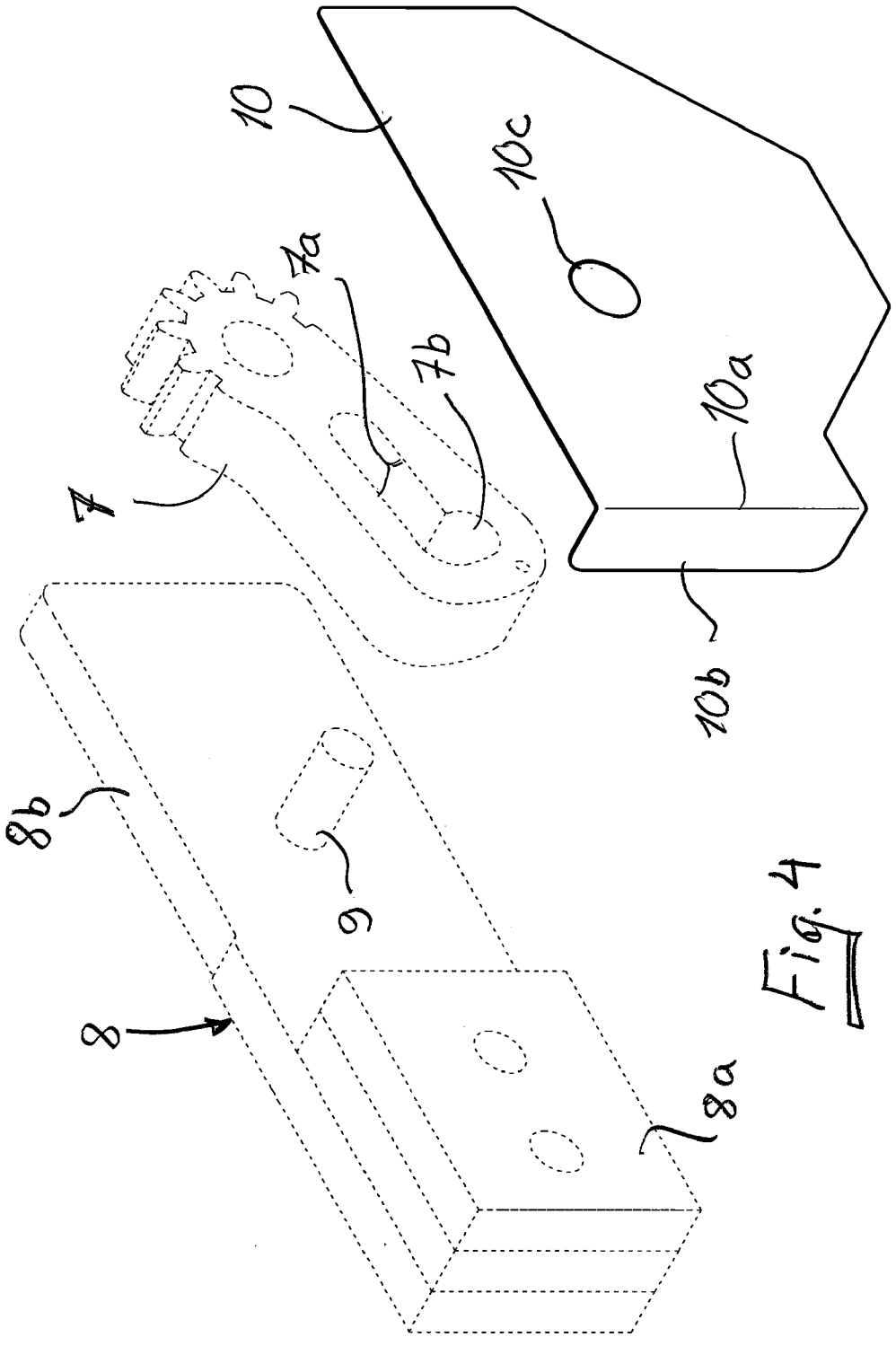


Fig. 4

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 09 17 5078

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 848 118 A (TESONE JEFFREY M [US]) 18 July 1989 (1989-07-18) * column 4, line 11 - line 38 * * figures 3,7,11 *	1-3	INV. E05B17/20 E05B63/00
X,P	EP 2 105 558 A2 (DORMA GMBH & CO KG [DE]) 30 September 2009 (2009-09-30) * column 6, line 6 - line 13 * * figures 1-4 *	1	
A	JP 2005 320706 A (MIWA LOCK KK) 17 November 2005 (2005-11-17) * abstract * * figures 3,4 *	1	
A	US 4 248 068 A (ESSER HANS J ET AL) 3 February 1981 (1981-02-03) * column 4, line 38 - line 43 * * figures 6-9 *	1	

TECHNICAL FIELDS SEARCHED (IPC)

E05B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	9 February 2010	Bitton, Alexandre

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 09 17 5078

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

09-02-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4848118 A	18-07-1989	CA 1317778 C	18-05-1993
		GB 2206919 A	18-01-1989
EP 2105558 A2	30-09-2009	CN 101545332 A	30-09-2009
		DE 102008016319 A1	08-10-2009
JP 2005320706 A	17-11-2005	NONE	
US 4248068 A	03-02-1981	AU 4089878 A	24-04-1980
		CA 1127684 A1	13-07-1982

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82