

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
30 March 2006 (30.03.2006)

PCT

(10) International Publication Number
WO 2006/033566 A2

(51) International Patent Classification:
E05B 63/20 (2006.01) *E05B 59/00* (2006.01)

(21) International Application Number:
PCT/MK2005/000001

(22) International Filing Date:
12 September 2005 (12.09.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
20040342 24 September 2004 (24.09.2004) MK

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(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: BASIC MECHANICAL AUTOMATIC DOOR'S LOCK WITH CENTRAL GEARBOX

(57) Abstract: The essence of the invention "BASIC MECHANICAL AUTOMATIC DOOR'S LOCK WITH CENTRAL GEARBOX" is introducing a central gearbox (7) with special construction rotating around the cylindrical door's lock and moves the inner safety device (9) and the latch bolt for horizontally locking (5), through the lever (8) and the door's lock latch bolt. The special elements and the location of the helical spring (10) and the springs (11), (12) and (13), as well as the lever (8) enable the special dynamic of the mechanisms, so that the door lock can be unlocked with the key, and automatically locks up in two fix spots with the closing the door. The proposal door's lock is unlocking with the rotation of the key from the cylindrical door's lock for 90, and using of the doorknob from the outside and inside is avoided. With placing the bulb on the inner side instead of a key, the "anti panic" function is provided.



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BASIC MECHANICAL AUTOMATIC DOOR'S LOCK WITH CENTRAL GEARBOX**DESCRIPTION OF INVENTION****Technical field on which the invention is relating to**

The door lock is relating to the field of mechanical as well as to the field of engineering. It is used for protection any kind of property. In accordance with the International Patent Classification (IPC), the invention's class is E05, wherein the locks and keys are disposed.

5 Technical problem solved by the invention

The people, from earlier time until now, had and have need to secure some specific areas from entering of uninvited persons, with the purpose of protection of the private and state property or to feel secure in those areas. For this purpose, people has developed the varieties of locking systems, so called locks.

10 Description of the present state of the art

Mechanical systems for locking – locks, exists in the variety of performances, forms and sizes. Some locks are use for security locking – blocking in one fix spot, some in two fix spots, and some in more fix spots.

There are locks with its own key and locks using auxiliary – cylindrical locks with key. The locks that are using auxiliary locks and are solving only the problem of locking, in other words, blocking with the movement of specific metal bars and rods, are called basic locks. The said lock is a special construction of a main lock, and exactly, it solves the problem of multiply security and using of auxiliary cylindrical lock for solving the combinations and the key.

Description of the solution of the technical problem

20 The invention **BASIC MECHANICAL AUTOMATIC DOOR'S LOCK WITH CENTRAL GEARBOX** is designed within standardized dimensions. The door's lock mechanisms are made on a such a way to provide more secure protection with its dynamics. In the same time there's providing the rationalization of human manipulation.

Namely, the use of doorknob is absolutely unnecessary here as the opening of the door from inside and outside is performed by using the cylindrical - in other words "the half cylindrical lock". Therefore this lock is called "automatic". The lock unlocks by itself using the key from the cylindrical lock, and the locking is performed with pushing (from inside) or the pulling (from outside). While the entering into the interior part of the door, the lock latch bolt is positioned, so that, at the time of exiting, in other words at the time of entering into the faceplate, opening of the door, the helical spring is released as the central gearbox pulls out the locking latch bolt. The lock mechanisms are made in such a way that behind the inner part of the latch bolt, in the same moment, is located an inner safety device which does not permit the door latch bolt to move

he pulls out the latch bolt for horizontally locking using the key from the cylindrical lock, and then with the same movement (no more than 90°) pulls out the latch bolt from the lock. In this way, the lock will be completely unlocked. When the key from the cylinder lock is released from the pressure, the lock latch bolt goes backward, in the other words exits from the lock, as long as the latch bolt for horizontal locking remains inside. In the case when the key from the cylinder lock will be pulled out from the cylinder by pulling out and by rotation in the opposite direction for 90°, and when the owner will enter into the area, while pushing the door he is locking the lock in two spots – using the latch bolt for horizontally locking and the door lock latch bolt. When the owner wants to go out from the room, he turns the key (or some other mechanism, for example: bulb) located on the inner side of the cylinder lock (if he uses half cylindrical lock), he turns the key for 90° and the lock is unlocked. When somebody is going outside, for the purpose of repeatedly locking, it is enough only to pull the door.

So, the operation of locking from the inside and outside is avoided, while the unlocking comprises only of turning the key for 90°.

This is possible by using the basic part of the door lock mechanism – central gearbox with three protruding parts, the activity of the gearbox on the cylinder door handle set in motion the other parts. The central gearbox rotates around the central part of the door lock body. The other parts of the door lock are: latch bolt for horizontally locking, lock latch bolt, and two hinged linked levers for transportation of the latch bolt for door handle, inner safety device, three springs and one helical spring.

Positioning of the half cylinder instead of the cylinder lock provides “anti panic” function, in other words, the lock can be unlocked in one move and the getting out from the room is enabled. At the same time, with installation of the mechanism through the bulb, the lock is secured from the outside unlocking by simple pushing of the locking key.

This basic mechanical automatic door’s lock can be used with all standard cylindrical door locks. The sizes are selected in such a way to provide fixedness of the lock within the most common wood and aluminum doors. The technology for producing of the said door lock is very simple. A part of the door lock components are manufactured by cutting, bending and punching, and the other parts are produced by using of powder sinter technology. The material of the door’s lock assembly is steel, while the friction as well as the spring usage is reduced to a minimum as the lifetime of the door’s lock as an element for building will be multiply increased.

To secure the cylinder door lock from breaking, security bulb is provided, in which the cylinder lock is mounted. The bulb is fixed from the inside through the openings of the said basic door lock, made for such purpose. The security bulb in the same time is intended for pulling and pushing the door.

In the figure 1, it is shown the door lock in unlocking position,

In the figure 2, it is shown the door lock ready for locking,

In the figure 3, it is shown the door lock in the locking position,

In the figure 4, it is shown the door handle mounted on the door using the security bulb,

5 cylindrical door lock and inner bulb.

All mechanisms are located into the door lock box (1). The strikeplate is located on the front part (3) while through their openings (15) and (16), the door lock latch bolt (4) and the latch bolt for cylindrically locking exists. The opening (17) is made on the metal plate (3) for the fixing the cylinder door lock, and also, two openings (18) are made for fixing the basic door lock on the door.

10 The box (1) is covered by special cover (2) for stabilizing of the door lock mechanisms by two cylindrical distance elements, as well as, one little stem (20) as a distance element. The box (10), the cover (2) and the strikeplate (3) are all the parts of the door lock body.

By turning the key from the cylindrical door, the gearbox is set in motion as the central gearbox (7) starts to rotate and pull the inner safety device with its leg components. During the moving of inner safety device (9), the helical spring (10) decreased. In the same time, the central leg component of the central gearbox (7) moves and retracts the gearbox within the inner part of the door lock body and into the latch bolt for horizontal locking (5). With the further rotation of the central gearbox (7) its third leg component lifts the lever (8) to the door's handle, in the same time the door lock latch bolt is retracted into the door lock body. By that, the basic door lock is completely unlocked and the door can be open.

By releasing the key of the cylindrical door lock from the pressure, the spring II (12) turns back the door lock latch (4); in other words, pulls out from the door lock body, while the latch for the horizontally locking (5) stay retracted. This is happened because of that the inner safety device (9) is stopped in its position by spring (11) and helical spring (10) and it doesn't activate to pull back the central gearbox (7) into the primary position using the inner safety device (9). This doesn't happen because because of that when the door lock latch (4) moves back, the mounted spring II (13) doesn't pull back the spring because of that, on the lever (8) to the latch bolt (4) there is a limiter is placed on the upper part that changes the trajectory of the spring when the central gearbox (7) press the lever (8).

30 Then the said door lock is in the locking position, and the key from the cylindrical door lock is taken out with the insertion in the primary position. The locking is performed by pulling the door from the outside, or with pushing the door from the inside. As it is specified, firstly, the latch bolt (4) retracts from the edge of the door strakeplate because of its biased form, and further while entering in the opening specially made in the strikeplate, gets out from the body. At the moment of getting out, because of that, the lever's limiter doesn't stand in the way, the mounted spring (13) is

pulling out the spring (11) for the inner safety device (9) and the inner safety device (9) under the collected force from the helical spring (10) rotates the central gearbox (7), that moves the latch bolt for the horizontally locking (5). In the other words it pulls out from the door lock body, and retracts in the strikeplate opening made for that purpose. The inner safety device (9), moving under the
5 force of the helical spring (10) is located behind the door lock latch bolt (4) and blocks it. In this way, the said door lock can lock without using the key from the cylindrical door lock, or the bulb from the inner side, if there is such, instead of key.

The said door lock is built in on the apartment's door for entering and exiting, individual residential buildings, offices, banks, hotels etc., in the field of construction for securing the state or
10 private property and self security. The door lock can be built in metal casements, sheet metal drawers and the like.

Using the additional information provided from the applicant, the door lock can be produced in the metal industry, with the following operations: cutting, bending, punching and pressing with burning (sinter technology).

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PATENT CLAIMS

1. The invention “Basic mechanical automatic door lock with central gearbox” is characterized by that it comprises central gearbox (7) with the special construction enabling similarly moving of the mechanical systems - inner safety device (9), latch bolt for horizontal locking (5), lever (8) for moving the doorknob latch bolt, it comprises springs with special construction who enables retention of the latch bolt for horizontally locking (5) in the retracted position during the unlocking, and its repeatedly back in the primary position, in other words, pulling out from the door lock body with extracting and retracting the door lock latch bolt (4), without using the key.

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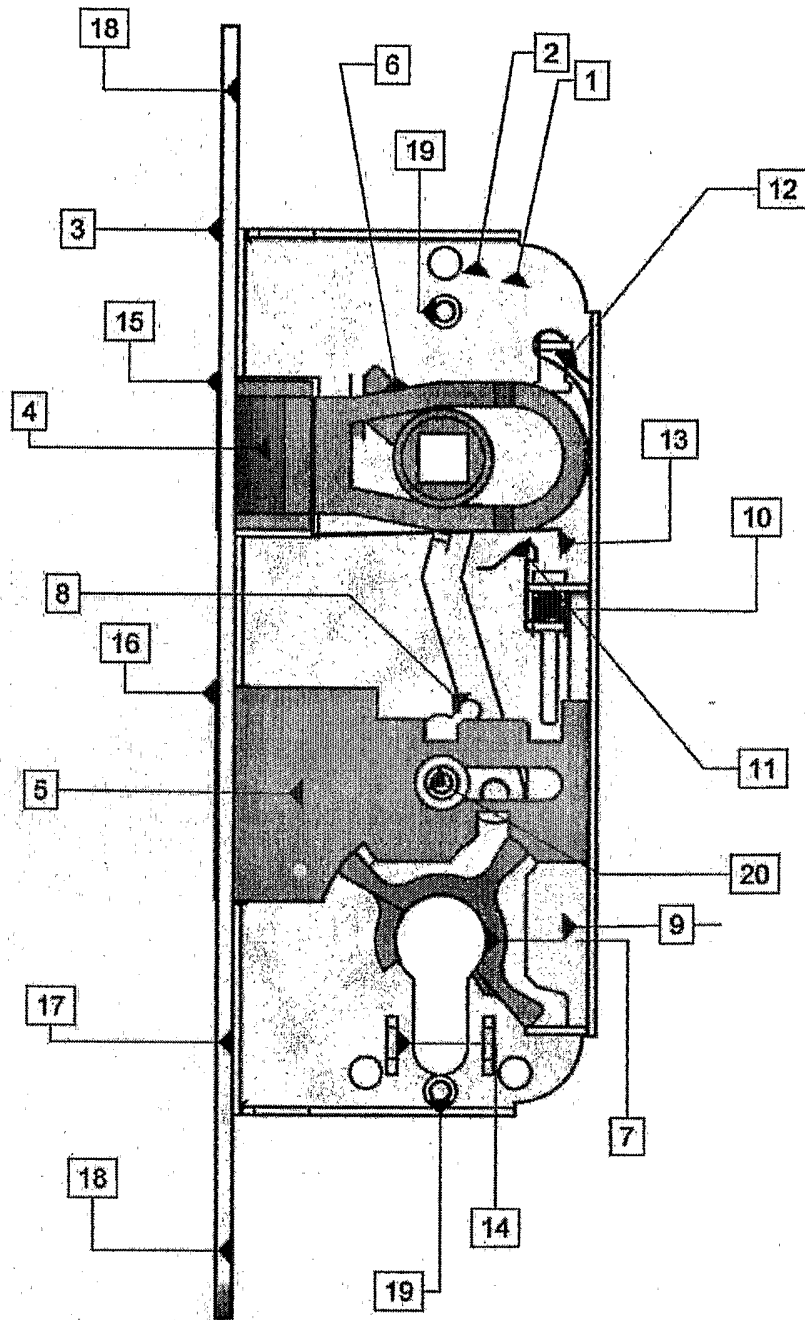


Fig.1

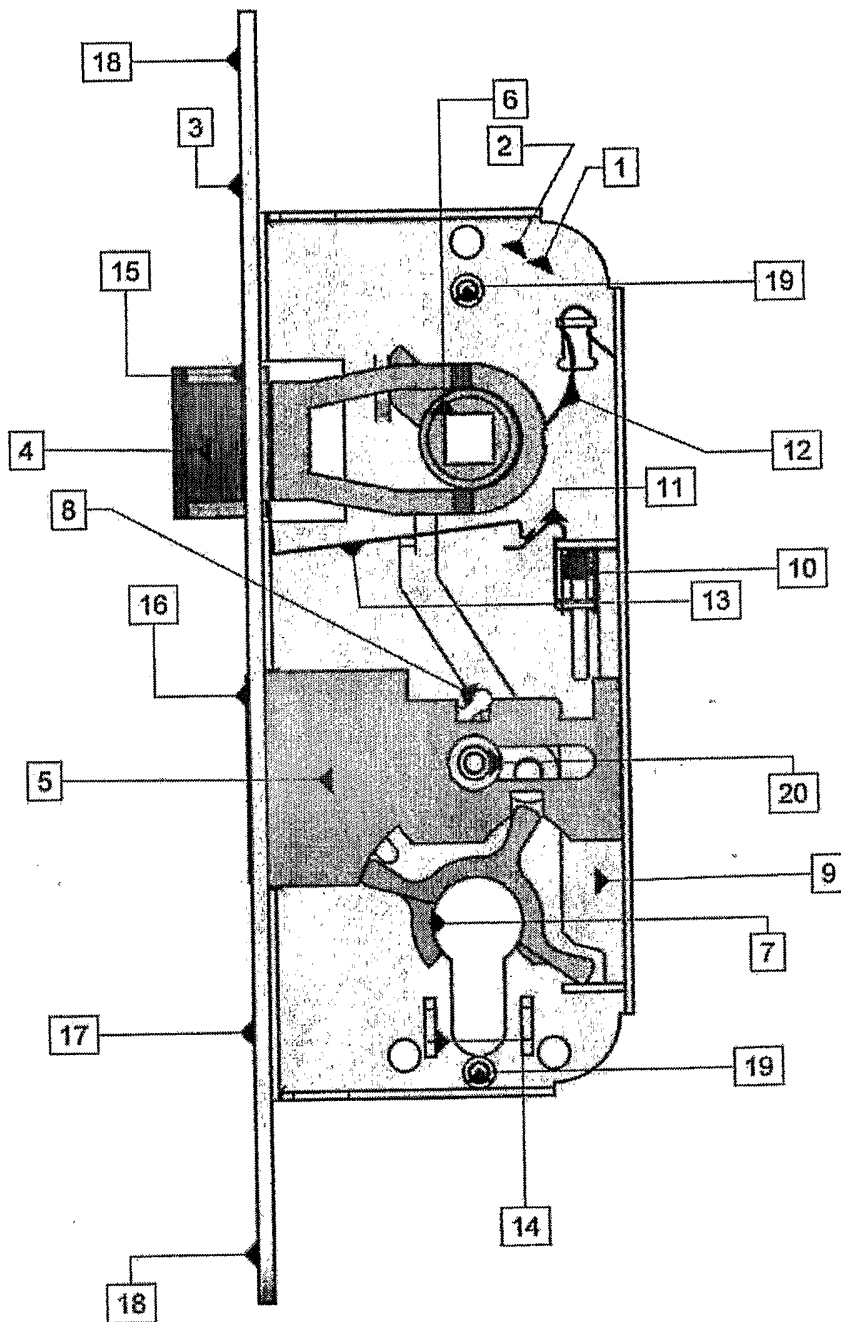


Fig.2

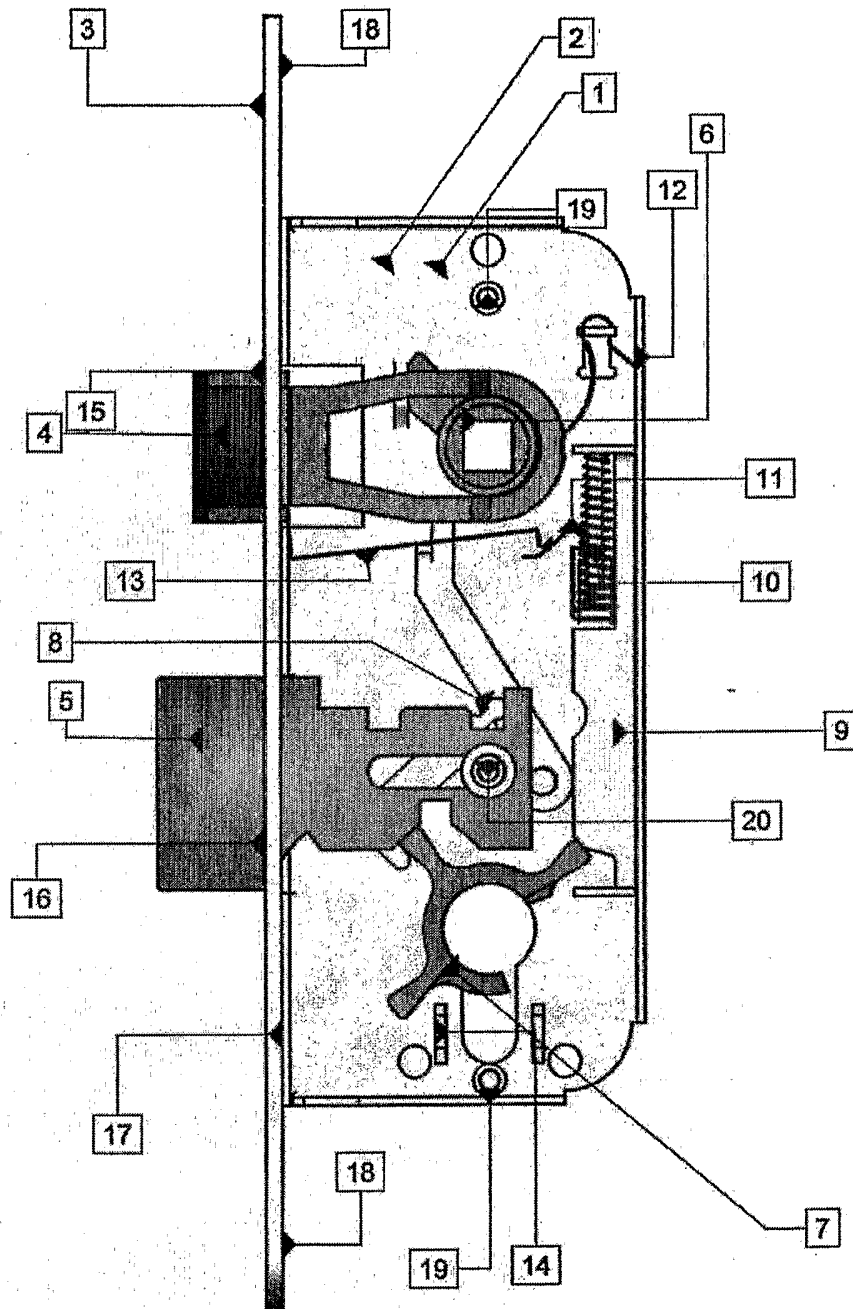


Fig.3

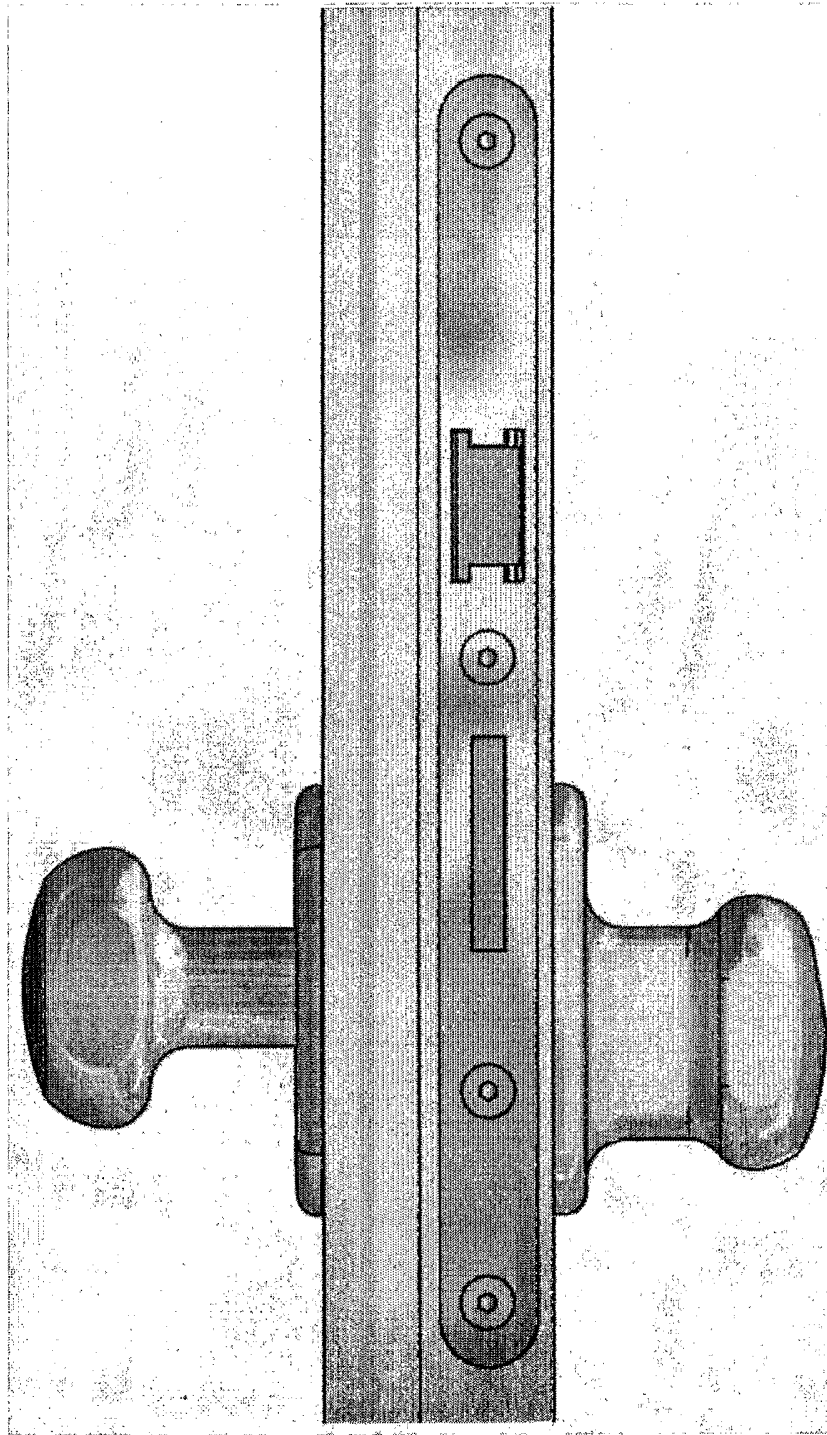


Fig.4