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(54) **Mortise roller lock**

(57) A subject matter of the present invention is a mortise roller lock incorporating a roller with rotatable fastening on a slide block performing to - and - fro movement in course of operation; being under the influence of spring and incorporating a mechanism for non-loaded roller position adjustment.

The roller (2) of the lock in the central part of rotating surface is provided with a cutout (1) with the surface con-

stituting the section of side walls of a cylinder or of a prism, wherein the axis of said solids is perpendicular to the roller axis (13) but without intersecting the latter and the face plate (6) of the lock is provided with the opening for the roller and slide block of the roller, additionally increased by a cutout (3) in the shape of a fragment of circle or polygon or ellipse, wherein such cutout is situated on the level of the cutout in the roller.

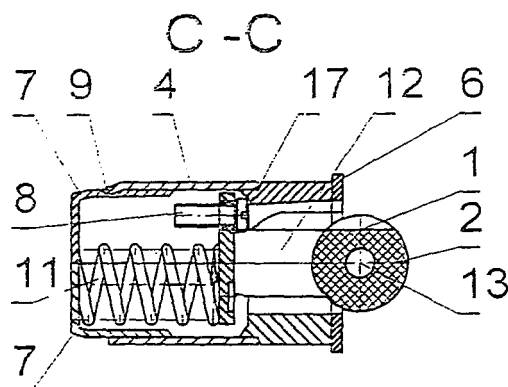


Fig. 3

Description

[0001] A subject matter of the present invention is a mortise roller lock particularly applied in the furniture doors and in joinery as well as incorporating a roller with rotatable fastening on a slide block performing to - and - fro movement; being under the influence of spring and incorporating a mechanism for non-loaded roller position adjustment.

[0002] The roller locks are generally known, particularly those applied for the doors. Said roller locks are usually mounted in the recesses provided in the doors or door frames. The lock consists of the lock box constituting the enclosure of the roller mechanism, usually consisting of the roller, slide block of the roller and rivet or bolt constituting the rotation axis of roller as well as of the mechanism for non-loaded roller position adjustment and spring. The adjustment mechanism always incorporates an adjustment screw and bearing surface directly or indirectly supporting the slide block of the roller.

[0003] The lock box usually consists of two metal sheets characterized by proper shape and screwed or riveted together. The face plate of the lock is fastened onto one of said metal sheets constituting the lock box elements. Said face plate of the lock is screwed or riveted to the lock box element in known solutions. There are also solutions with face plate and lock box of the lock casted in the form of an integral element or in the form of two elements with one of said elements used for screwing of lock box cover.

[0004] The disadvantage of the method of lock box elements connection consists in technological complexity in case of their connection by means of threaded elements i.e. high costs of workmanship or problematic repairs of the lock. The spatial extension of the lock is necessary as a result of threaded and rivet fasteners.

[0005] The inconvenience of these solutions i.e. the integration of the face plate with the box is caused by unsatisfactory aesthetical features resulting from the structural or technological elements, i.e. face fastening screws or rivets traces, occurring on mostly exposed element of the lock i.e. the face plate of the lock. In case of castings, the material is a disadvantage e.g. in case of the face plate to be made of stainless steel.

[0006] The mechanism for non-loaded roller position adjustment applied in known solutions incorporates the adjustment screw with the axis perpendicular to the face plate of the lock and always located on the plane passing through the roller axis and perpendicular to the face plate of the lock. Usually the axis of the adjustment screw is located under the roll when looking at the lock mounted in the door.

[0007] The necessity of spatial extension of the lock is the essential disadvantage of this solution. Such solution is illustrated in the patents DE 4218733A1 and EP 0785321B1, although the subject of these patents is different.

[0008] Another known solution incorporates the ad-

justment screw with the axis intersecting the axis of the roller i.e. the adjustment screw is mounted behind the roller and accessible through an opening provided in the roller. The axis of this opening is perpendicular to the axis of the roller and the axes intersect each other. Such solution is illustrated in a French patent - FR 2844820A1.

[0009] The impossibility to apply the rigid connection between the slide block and axis of the roller with favourably small diameter is the essential disadvantage of this solution. Therefore the bearings system of the roller is located between the roller pins and the slide block causing the impairment of durability or two pins are riveted in the slide block of the roller on the both sides of the roller which is an expensive and technologically difficult solution.

[0010] The aim of the invention is to elaborate the construction of a mortise roller lock to be mounted in a cylindrical recess i.e. which can be prepared by means of a drilling tool. Therefore the installation will be simple. Owing to the width of the door said lock shall be extremely compact with the diameter ensuring its correct functioning. Furthermore said lock shall provide the option in the form of the face plate made of stainless steel sheet.

[0011] The aim of the invention has been accomplished in the mortise roller lock solution pursuant to the invention, incorporating the roller with rotatable fastening on the slide block performing to - and - fro movement in course of the lock operation; being under the influence of spring with one end supported on the bottom of the box and another end on the latter wall of the slider block and incorporating the mechanism for non-loaded roller position adjustment.

[0012] The distinctive feature of the mortise roller lock solution pursuant to the invention is the fact that the axis of adjustment screw intersects the face plate of the lock in the proximity of a clearance between the central part of the rotating surface of the roller and opening for the roller provided on the face surface of the lock. A cutout has been provided in the roller on the level of said axis and opening for the roller in the face plate has been enlarged i.e. provided with similar cutouts, favourably consisting a fragment of circle, enlargements of opening. The cutout on the roller has not to be provided on the whole circumference of the roller. The purpose of said cutout and enlargement of opening for the roller is to enable the inserting of adjustment tool into the adjustment screw.

[0013] The advantage of this solution consists in space saving. The adjustment provisions and roller are contained in cylinder with adequate diameter, maintaining sufficiently large diameter of the roller and correct bearings system of the roller.

[0014] Another distinctive feature of the lock pursuant to the invention is the method of the connection of the lock face plate made of metal sheet. Two fragments of this plate have been bent from a part of metal sheet behind the opening for the roller, while said fragments in the part more distant from the face surface of the lock are wider than those in the part closer to the face surface

of the lock, and the lock box consisting of at least two elements, is characterized by favourably shaped seat in the form of bent fragments of the face surface of the lock, while the bent fragments of the face surface of the lock are locked by said elements of the lock box after final assembling of the lock. The shaping of bent fragments of the lock in the form of "T" letter is favourable.

[0015] The advantage of this solution consists in aesthetical features as a result of lack of any visible structural elements of the lock i.e. screws or riveted elements on exposed face plate of the lock. Another advantage of the lock is its compact structure at the face made of metal sheet.

[0016] Another distinctive feature of the lock pursuant to the invention is the method of the integration of individual elements of the lock box together. It is accomplished by means of a round sleeve to be slid over onto the lock box elements. In order to prevent any unintended sliding the sleeve off the box, a fragment said sleeve is crimped on the box after its positioning in proper position.

[0017] The advantage of this solution consists in the space achieved to incorporate the roller spring as well as in the durability and strength of such connection.

[0018] The object of the invention is has been illustrated as an embodiment example in the drawing, wherein Fig. 1 illustrates the front view of the roller lock pursuant to the invention; Fig. 2 illustrates the longitudinal section along the line B-B of the roller lock set up behind the line in top view; Fig. 3 illustrates the longitudinal section of the roller lock C-C in side view; Fig. 4 illustrates the lock roller in the variants in half section in top view; Fig. 5 illustrates the face plate in front view; Fig. 6 illustrates the section of the same face plate in top view; Fig. 7 illustrates the plate of the lock in side view; Fig. 8 illustrates detached lock box consisting of two parts with adhering face plate of the lock and with sleeve closing the lock; Fig. 8 illustrates the lock box with the face plate of the lock in top view.

Fig. 1 - illustrates the front view of the roller lock pursuant to the invention. The lock incorporates the face plate 6 of the lock with 14 openings 14 to be used for the lock fastening, rotatable roller 2 mounted on the axis 13 of the roller permanently fixed in the slide block 12 of the roller. The cutout 3 is provided on the side of roller to enlarge the opening for the roller in the face plate 6 of the lock.

Fig. 2 - illustrates the longitudinal section along the line B-B from Fig. 1 wherein the section of the box 7 of the lock and the face plate 6 of the lock incorporate the roller 2 with the cutout and slide block 12 of the roller as well as spring 11 incorporated in the box 7 of the lock.

Fig. 3 - illustrates the longitudinal section along the line B-B from Fig. 1. This figure represents the layout of parts i.e. the lock roller 2 with partial cutout 1 on the roller surface in the split box 7 additionally closed

by means of locking sleeve 4. The rotatable roller 2 fixed on the axis 13 incorporated in slide block 12 of the roller wherein said roller is supported via the adjustment screw 8 onto the bearing surface 17 of the adjustment mechanism in the form of the bolt with head screwed in the lateral wall of the slide block in the present invention. The slide block 12 of the roll is affected by the roll spring 11.

Fig. 4 - illustrates another version of the roller 2 in top view in partial section representing a circumferential groove 15 provided along the whole circumference of the roller 2.

Fig. 5 - illustrates the face plate 6 of the lock, including the openings 14 for the lock fastening and cutout 3 enlarging the opening for the roller and enabling the access to the adjustment mechanism.

Fig. 6 - illustrates the section of the face plate 6 of the roller lock along the line B-B from Fig. 5 in top view with visible bent fragments 5 of said plate.

Fig. 7 - illustrates the face plate 6 of the lock in side view; with visible fragment of the face plate 5 is visible with wider part of bent fragment 16 of the face plate of the lock.

Fig. 8 - illustrates the split box 7, consisting of two parts, of the roller lock prior to assembling and prior to installation of the bent fragment 16 of the face plate of the lock onto wider parts and prior to installation of the locking sleeve 4 onto the box 7 of the lock.

Fig. 9 - illustrates the split box 7, consisting two parts, of the lock and the face plate 6 in the position before the assembling wherein the seats 10 incorporating wider parts of bent fragments 16 of the face plate of the lock are represented.

Claims

1. The mortise roller lock incorporating the roller with rotatable fastening on the slide block performing to - and - fro movement in course of the lock operation; being under the influence of spring and incorporating the mechanism for non-loaded roller position adjustment, **characterized in that** the roller (2) of the lock in the central part of rotating surface is provided with a cutout (1) with the surface constituting the section of side walls of a cylinder or of a prism, wherein the axis of said solids is perpendicular to the roller axis (13) but without intersecting the latter and the face plate (6) of the lock is provided with the opening for the roller and slide block of the roller, additionally increased by a cutout (3) in the shape of a fragment of circle or polygon or ellipse, wherein such cutout is situated on the level of the cutout in the roller.
2. The lock according to claim 1 **characterized in that** the roller (2) of the lock in the central part of rotating surface is provided with a circumferential groove (15)

along the whole circumference of the roller or along a part of circumference of the roller with the cross-section in the shape of a fragment of circle or polygon or ellipse, and the face plate (6) of the lock is provided with the opening for the roller and slide block (12) of the roller, additionally increased by a cutout (3) in the shape of a fragment of circle or polygon or ellipse, wherein such cutout is situated on the level of the cutout (1) in the roller.

3. The lock according to claim 1 **characterized in that** the face plate (6) is provided with the opening for the roller and slide block of the roller, additionally increased by a cutout (3) in the shape of a fragment of circle, or polygon or ellipse with the dimension close to the dimensions of the half of circle with the diameter of the cross - section of the screw used for the roller extension adjustment (8) .
4. The lock according to claim 1 **characterized in that** the roller (2) of the lock in the central part of rotating surface is provided with cutout (1) perpendicular to the axis of the roller with the surface constituting the section of side walls of a prism or of side wall of cylinder, wherein the axis of said solids is perpendicular to the roller axis (13) but without intersecting the latter.
5. The lock according to claim 1 **characterized in that** the face plate (6) made of metal sheet is integrated with the split box (7), by means of the bent fragments (5) of the face plate of the lock wherein parts (16) more distant from the face surface of the lock are wider than those in the part closer to the face surface of the lock; and wherein the lock box (7) consisting of at least two elements, incorporates a favourably shaped seats (10) for bent fragments (5) of the face plate of the lock, wherein said split elements of the lock box (7), after their final assembling in the lock, will fasten the bent fragments of the face plate (6) of the lock.
6. The lock according to claim 1 **characterized in that** the split lock box (7) consisting of at least two elements, is integrated as a result of by means of a locking sleeve (4) to be slided over onto said parts.

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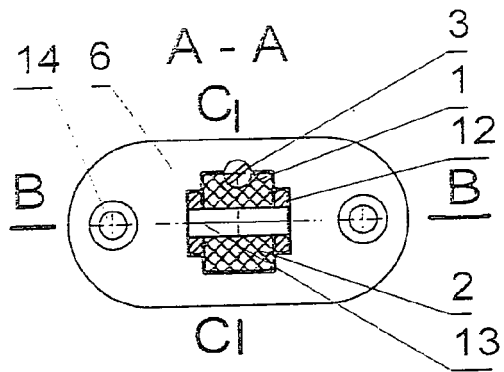


Fig. 1

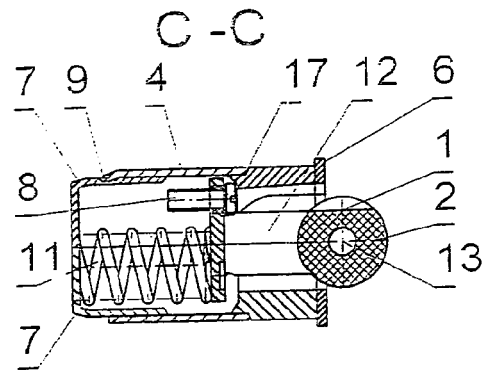


Fig. 3

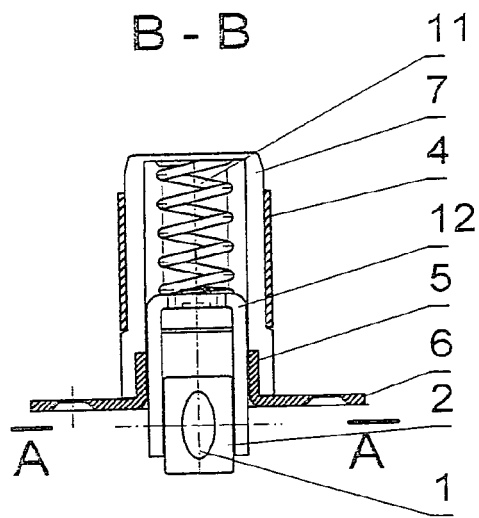


Fig. 2

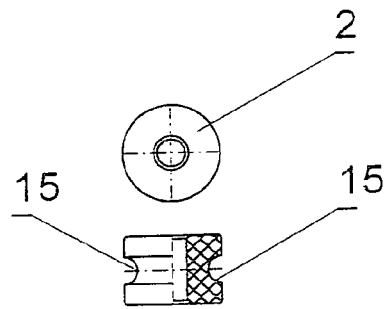


Fig. 4

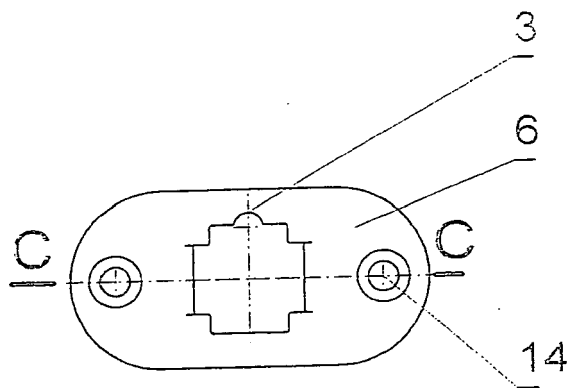


Fig. 5

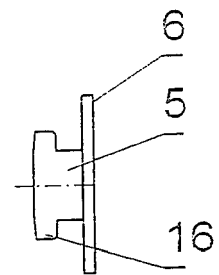


Fig. 7

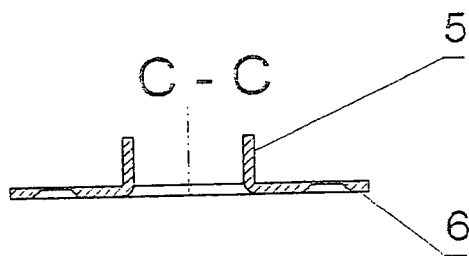


Fig. 6

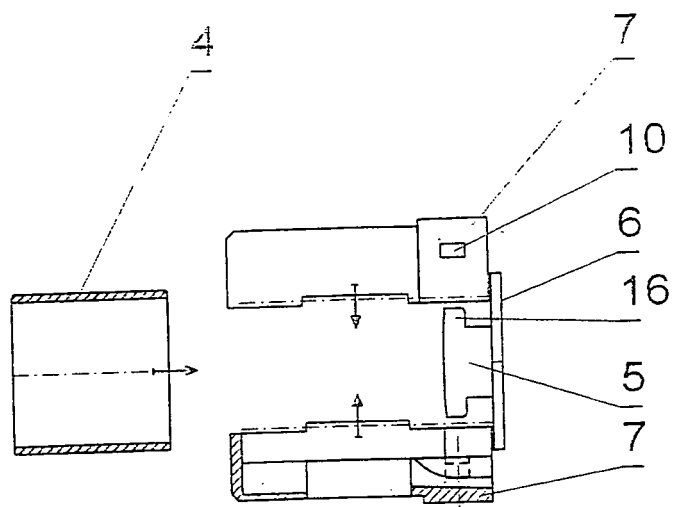


Fig. 8

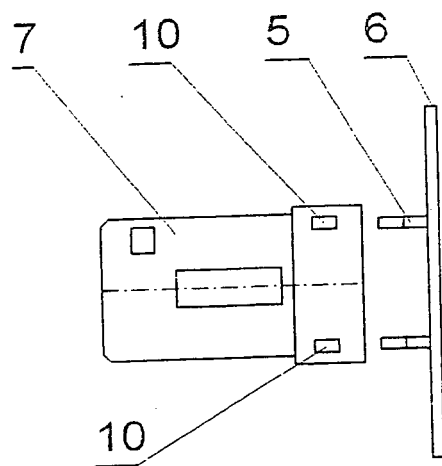


Fig. 9

Register symbol from figures

1. – cutout in the roller
2. – roller
3. – the cutout to enlarge the opening for the roller
4. – locking sleeve
5. – bent fragment of the face plate
6. – face plate lock
7. – split box lock
8. – adjustment screw situation roller to not weight
9. – crease blocking to advanced sleeve
10. – seats incorporating of bent fragment of the face plate
11. – spring roller
12. – slide block
13. – roller axis
14. – the lock for the lock fastening
15. – circumferential Groove in the roller
16. – wider part of bent fragment of the face plate of the roller lock
17. – bearing surface of the adjustment mechanism

REFERENCES CITED IN THE DESCRIPTION

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