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TITLE: LOCK

BACKGROUND OF THE INVENTION

This invention relates to a lock, particularly to one having a dead bolt provided with a lateral through hole with a sloped face in its inner side contacting and
5 slid on by a sloped face of an inner end of a coactive bolt moved inward by one of two key blocks when the key block is rotated by a key so that the dead bolt is pushed down to unlock a locking bar from a non-through
10 hole provided in a main lock body.

A known conventional lock disclosed in Taiwan patent Serial No. 87214 has components easily worn and of high cost, and is inconvenient to handle.

Another known conventional lock disclosed in
15 Taiwan patent Serial No. 166364 has a complicated structure with many components of high cost.

One more known conventional lock disclosed in Taiwan patent Serial No. 108633 has also many components of high cost.

20 SUMMARY OF THE INVENTION

This invention has been made to offer a lock improved to have advantages of 1. simple handling, 2. less components, quick assembling, and low cost, 3. a compact and strong structure.

25 BRIEF DESCRIPTION DRAWINGS

This invention will be better understood by referring to the accompanying drawings, wherein:

Figure 1 is an exploded perspective view of a first embodiment of a lock in the present invention;

5 Figure 2 is a perspective view of the first embodiment of a lock in the present invention;

Figure 3 is a cross-sectional view of the first embodiment of a lock in the present invention; and,

10 Figure 4 is a cross-sectional view of a second embodiment of a lock in the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A first embodiment of a lock in the present invention, as shown in Figs. 1 and 3, includes a main lock body 15, a subordinate lock body 16, two key blocks 15 2, a dead bolt 3, a position bolt 4, an elongate locking bar 5, a force-resistant housing 7, and a coactive bolt 8 as main components.

The main lock body 15 has a combine hole 151 of a rectangular (or circular, etc) cross-section formed in a left section of a lower horizontal portion, at least a 20 tightening bolt 153 screwing laterally in a hole formed in a side wall of the lower horizontal portion and extending in the combine hole 154 and having a seal cap 154 sealing a hole in the head of the tightening bolt 25 153. Further, the main lock body 15 has a horizontal non-through hole 12 formed to open to a left side of an

upper horizontal portion extending from a right side of the lower horizontal portion, and two key blocks 2 vertically provided in a right side of the upper horizontal portion.

5 The subordinate lock body 16 has a vertical block portion and a lateral connect post 161 of a rectangular (or circular, etc.) cross-section extending from a first side of the vertical block portion to extend in the combine hole 151 of the main lock body. The lateral
10 connect post 161 has at least one recess 162 with a sloped face formed in a right or left side of the end to be fitted therein by the tightening bolt 153 when the lateral connect post 161 engages the combine hole 151 in assembling the subordinate lock body 16 with the main
15 lock body 15. Further, the subordinate lock body 16 has a lateral hole formed in an upper end of the vertical block portion for the locking bar 5 to pass through.

 The position bolt 4 is received in a vertical hole formed in the vertical portion of the subordinate lock
20 body 16 under the locking bar hole, and a coil spring located under the position bolt 4 to push the bolt 4 upward to let an upper end of the position bolt 4 fit in the annular groove 51 to keep the locking bar in the unlocked position.

25 Next, as shown in Figs. 3 and 4, a stop pin 122 is provided in the non-through hole 12 for stopping a push member 121 always urged by a coil spring 14 behind the

push member and resting against the inner end of the combine hole 12.

The elongate locking bar 5 has an annular groove 51 formed near an inner end either to engage with the position bolt 4 located vertically under the lateral circular hole of the subordinate lock body 16 when the locking rod 5 is unlocked and pulled out of the combine hole 12, or engaged with the dead bolt 3 urged by a coil spring 32 and located vertically in the upper horizontal portion of the main lock body 15 and under the combine hole 12 when the key block 2A or 2B is rotated to lock the elongate locking bar 5.

The dead bolt 3 has a lateral through hole 33 of a proper size with a sloped face 331 formed in a lower side of the hole 33 for a sloped face 60 in an inner end of a coactive bolt 8 to contact and slide thereon, and a sloped upper end to engage with the annular groove 151 of the locking bar 5 in locking, pushed up by a coil spring placed under the dead bolt 3 when the coactive bolt 8 is pushed inward by the coactive block 2A1 or 2B1 of the key block 2A or 2B. If the dead bolt 3 is pushed down by the coactive bolt 8 by unlocking the locking bar 5 by a key rotating the key block 2A or 2B counterclockwise, the dead bolt 3 is disengaged from the locking bar in the unlocked position.

The coactive bolt 8 is provided in a horizontal hole formed in a lower section of the upper horizontal

portion of the main lock body 15, having an outer large-diameter portion 81 to stop a coil spring 82 fitting around an intermediate portion to push back the coactive bolt 8 to let the dead bolt 3 move up to lock the locking bar 5 if the coactive bolt 8 is pushed inward by the coactive block 2A1 or 2B1 of the key block 2A or 2B, as shown in Figs. 3 and 4 when the key block 2A or 2B is rotated clockwise by a key. If the key block 2A or 2B is rotated counterclockwise, the coactive block 2A1 or 2B1 pushed inward and pushing inward the coactive bolt 8 to let the sloped face 60 move inward and slide on the sloped face 331 of the dead bolt 3 so that the dead bolt 3 in the locking position wherein the upper end of the dead bolt 3 is engaging the annular groove 51 of the locking rod 5 may be lowered down, disengaging the dead bolt 3 from the locking rod 5, which is then pushed out of the non-through hole 12 by the push member 121 and the coil spring 14, i. e. unlocking the lock.

The force-resistant housing 7 is heat-treated to resist external force in an attempt of braking the lock, provided to surround the whole lock including the main lock body 15 and the subordinate lock body 16. Then a side cover 70 is provided to close up the outer side of the subordinate lock body, making this lock more strong and practical to use than conventional locks.

Fig. 4 shows a second embodiment of a lock in the invention, having the same structure as the first embo-

diment except that only one key block is used.

While the preferred embodiment of the invention has been described above, it will be recognized and understood that various modifications may be made therein and the appended claims are intended to cover all such
5 modifications which may fall within the spirit and scope of the invention.



WHAT IS CLAIMED IS:

1. A lock comprising:

a main lock body having a combine hole of a rectangular (or circular, etc.) cross-section formed horizontally in a left section of a lower horizontal portion, at least one tightening bolt with a seal cap fitting in a hole formed in its head, screwing in a lateral hole formed in a right or a left side of said lower horizontal portion and extending in said combine hole, a horizontal circular non-through passageway formed in a left section of an upper horizontal portion extending up from said lower horizontal portion, a vertical circular hole formed vertically in a right side of said upper horizontal portion for receiving two key blocks therein, a vertical hole formed in a left side for receiving a dead bolt and a coil spring therein, a horizontal hole formed in an lower section for receiving a coactive bolt therein and communicating with said vertical hole and said horizontal hole;

a subordinate lock body having a left vertical block, a lateral connect post of a rectangular (or circular, etc.) cross-section extending from a right side of said left vertical block to fit in said combine hole of said main lock body, said lateral connect post having at least one recess with a sloped side face formed in a right or left side for engaging with said



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tightening bolt in said main lock body so as to assemble with said main lock body, and a locking bar hole formed horizontally in an upper end of said left vertical portion for a locking bar to pass through and move
5 therein;

a stop pin provided in a rear portion of said non-through hole of said main lock body, a push member with a coil spring behind said push member provided in the rear portion of said non-through hole, said push
10 member pushed to move outward by said coil spring and stopped by said stop pin;

a dead bolt provided in a vertical hole formed in a left section of said upper horizontal portion and lower horizontal portion of said main lock body and
15 urged by a coil spring fitted under said dead bolt and stopped by the bottom of said vertical hole to push up said dead bolt to let an upper sloped end of said dead bolt engage an annular groove of said locking bar to lock said locking bar when said dead bolt is pressed
20 down, having a lateral hole of a proper size in an intermediate portion and provided with a rear lower sloped face;

a coactive bolt provided in a horizontal hole in a lower section of said upper horizontal portion of said
25 main lock body and pushed to move inward by a key block and having an sloped downward face formed in an inner end to contact and slide on said slope face of said dead



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bolt so as to move up or lower said dead bolt in locking or unlocking said locking bar;

5 said elongate locking bar extending through a bar hole of said subordinate hole and in said non-through hole of said main lock body, having an annular groove near an inner end for the upper end of said dead bolt to engage in locking or disengage from in unlocking; and,

10 said coactive bolt having a rear large diameter portion for stopping a coil spring fitting around a small diameter intermediate portion, the inner end of said coactive bolt contacting a coactive block of each said key block, said coactive bolt moved inward by said coactive block when said key block is rotated by a key so that said sloped face of the inner end of said
15 coactive bolt may slide inward on said sloped face of said dead bolt and push down the dead bolt to unlock said locking bar.

20 2. The lock as claimed in Claim 1, wherein the inner end of said coactive bolt extends in said key block to contact said coactive block and may be pushed inward by any of said two key blocks rotated by a key.