



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
08.09.2021 Bulletin 2021/36

(51) Int Cl.:
E05B 5/00 (2006.01) **E05B 3/00** (2006.01)
E05B 15/00 (2006.01) **E05B 15/10** (2006.01)
E05B 13/10 (2006.01)

(21) Application number: **20853593.0**

(22) Date of filing: **08.12.2020**

(86) International application number:
PCT/CN2020/134635

(87) International publication number:
WO 2021/147541 (29.07.2021 Gazette 2021/30)

(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
Designated Validation States:
KH MA MD TN

(71) Applicant: **Jiangsu Sanjo Intelligent Technology Co., Ltd**
Liyang City, Jiangsu 21330 (CN)

(72) Inventor: **XIAO, Heping**
Liyang City, Jiangsu 21330 (CN)

(74) Representative: **Ström & Gulliksson AB**
P.O. Box 4188
203 13 Malmö (SE)

(30) Priority: **21.01.2020 CN 202010072147**

(54) **DOOR/WINDOW LOCK WITH CONCEALABLE HANDLE**

(57) The present disclosure discloses a door or window lock with a concealable handle, comprising: a handle component, a latch component, and a housing. The handle component includes a rotary handle and a concealing part. The rotary handle is provided with a mounting cavity. The concealing part is arranged at the bottom of the mounting cavity. The concealing part is fixed to the latch component and mounted inside the housing. The concealing part is configured to control the relative position of the rotary handle relative to the housing. The rotary handle is further provided with a lock core. The lock core is fixed inside the mounting cavity and located above the

concealing part. The bottom of the lock core is engaged with the concealing part. When the rotary handle is pressed to be concealed in the housing, the lock core is adjusted by the concealing part to a locked state. When the lock core is in an unlocked state, the rotary handle is partially ejected out of the housing by the concealing part. This technical solution achieves the object of concealing the rotary handle by the cooperation of the rotary handle with the concealing part, thereby solving the problems of the prior art door locks with unconcealable handles which may be easily damaged or cause potential safety hazards.

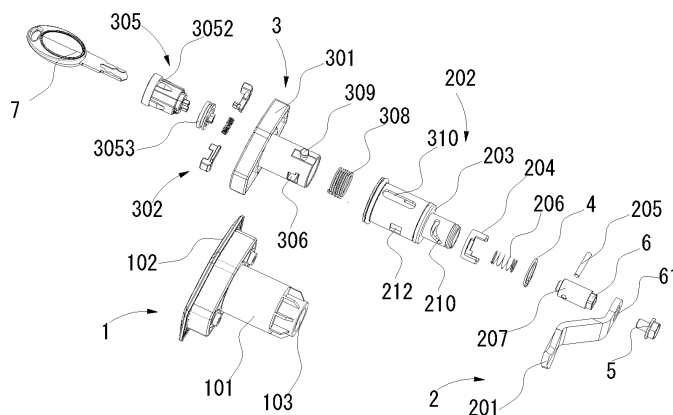


FIG. 1

Description

Cross-Reference to Related Applications

[0001] The present disclosure claims priority to Chinese Patent Application No. 202010072147.7, filed with the Chinese Patent Office on January 21, 2020, entitled "Door or Window Lock with Concealable Handle", which is incorporated herein by reference in its entirety.

Technical Field

[0002] The present disclosure pertains to the field of locks, and in particular relates to a door or window lock with a concealable handle.

Background Art

[0003] A door lock is a device used for locking a door to prevent others from opening the door. There are many types of door locks. Different door locks are required in various occasions. The currently commercially available door locks basically have handles. The handle functions as a point on which a force acts when the user wants to open the door, so that the door can be opened by twisting the handle. However, such handle has some problems because it is exposed to the outside. For example, the handle is often easily damaged by external impact, or the surface of the handle is scratched to adversely affect the overall appearance, or even the handle may fall off due to an excessive external force or a problem occurs in the connection between the handle and the door lock, so that the door lock cannot be opened by the handle. Moreover, children running and playing, and people such as those lowered their heads to pick up things have often collided with the handles, which may cause some physiological harm to people who are not aware of protecting themselves.

Summary

[0004] An object of an embodiment of the present disclosure is to propose a new technical solution for a door or window lock with a concealable handle, in order to ameliorate the above disadvantages of the prior art.

[0005] To achieve the above object, in a first aspect, an embodiment of the present disclosure provides a door or window lock with a concealable handle, comprising: a handle component, a latch component, and a housing. The handle component includes a rotary handle and a concealing part. The rotary handle is provided with a mounting cavity. The concealing part is arranged at the bottom of the mounting cavity. The concealing part is fixed to the latch component and mounted inside the housing. The concealing part is configured to control the position of the rotary handle relative to the housing.

[0006] Here, the rotary handle is provided with a lock core. The lock core is fixed inside the mounting cavity

and located above the concealing part. The bottom of the lock core is engaged with the concealing part. When the rotary handle is pressed to be concealed in the housing, the lock core is adjusted by the concealing part to a locked state. When the lock core is in an unlocked state, the rotary handle is partially ejected out of the housing by the concealing part.

[0007] In one of the embodiments, the latch component includes a latch and an adjusting part. A mounting hole is provided in the bottom of the housing. The adjusting part is arranged inside the housing. The adjusting part protrudes from the housing through the mounting hole and is connected fixedly to the latch. The adjusting part is configured to adjust the position of the latch.

[0008] In one of the embodiments, the adjusting part includes an adjusting cylinder. One end of the adjusting cylinder is fixedly connected to the latch. The rotary handle is partially slidably fitted to an inner cavity of the adjusting cylinder in a direction in which the rotary handle is pressed or ejected, and the rotary handle is fixed relative to the adjusting cylinder in a direction of rotation of the rotary handle.

[0009] In one of the embodiments, the adjusting part further includes an adjusting sleeve, a positioning pin, an adjusting spring, and a mounting support. The inner cavity of the adjusting cylinder includes a spring cavity and a handle cavity configured to allow the handle component to be mounted therein. The handle cavity is configured such that the handle component is mounted therein. The spring cavity is arranged at the bottom of the handle cavity. An end of the spring cavity away from the handle cavity is in an open structure. A limiting slot is provided in a side wall of the spring cavity. The adjusting sleeve is sleeved outside the spring cavity. The adjusting spring is arranged in the spring cavity. One of the ends of the mounting support is in contact with the adjusting spring. An adjustment limiting hole is provided in the end of the mounting support in contact with the adjusting spring. The positioning pin passes through both the limiting slot and the adjustment limiting hole. The adjusting sleeve is fixedly assembled with the housing to form an "L"-shaped groove which is configured to limit a path of movement of the positioning pin. The other end of the mounting support away from the adjusting spring is fixedly connected to the latch.

[0010] In one of the embodiments, the mounting cavity is provided in a hollow cylindrical structure with an upper opening. A first fixing limiting hole is provided in a side wall close to the bottom of the mounting cavity. A second fixing limiting hole is provided at a corresponding position of the handle cavity. The concealing part is provided with an elastic extendable block. The elastic extendable block is fixed at an inner bottom of the mounting cavity and is slidably fitted in the first fixing limiting hole. The lock core is engaged and fixed on the top of the elastic extendable block. The lock core is configured to control an extended or retracted state of the elastic extendable block.

[0011] In one of the embodiments, a push-out spring

is arranged between an outer bottom of the mounting cavity and an inner bottom of the handle cavity. A positioning protrusion is arranged on an outer side wall of the mounting cavity. A positioning slot extending in the direction in which the rotary handle is pressed or ejected is provided at a corresponding position of the handle cavity. The positioning protrusion fixes the rotary handle in the positioning slot.

[0012] In one of the embodiments, the elastic extendable block includes a first limiting block, a second limiting block, and a return spring. The first limiting block is provided with an insertion pin, an engaging base, and an inclined restoring block. The second limiting block is in the same structure as the first limiting block. The first limiting block and the second limiting block are arranged opposite to each other. The return spring has two ends simultaneously sleeved on the insertion pins of the first limiting block and the second limiting block. The engaging base is engaged and fixed in the first fixing limiting hole, to lock the rotary handle to the adjusting cylinder. The bottom of the lock core is provided with a shift block which is configured to shift the inclined restoring blocks so that the first limiting block and the second limiting block are moved towards each other in opposite directions to unlock the rotary handle from the adjusting cylinder.

[0013] In one of the embodiments, the lock core includes a rotary lock head and a rotary lock disk. The rotary lock head is provided with a key insertion hole. A shift lever is arranged at the bottom of the rotary lock head. A shift lever groove is provided in a surface of the rotary lock disk close to the shift lever. The shift lever is plugged and fixed in the shift lever groove. The shift block is fixed at the bottom of the rotary lock disk. The rotary lock head and the rotary lock disk are moved synchronously under the action of the shift lever and the shift lever groove.

[0014] In one of the embodiments, two projecting blocks are arranged on an inner side wall of the housing at positions corresponding to the adjusting sleeve. The adjusting sleeve is in a cylindrical structure opened at both ends. A first notch corresponding to one of the two projecting blocks is provided in a side wall of the adjusting sleeve. A second notch is provided beside the first notch. The second notch has a width greater than or equal to a diameter of the positioning pin, and the second notch has a height lower than that of the first notch. The "L"-shaped groove is formed by the first notch, the second notch, and one of the two projecting blocks. The two "L"-shaped grooves are provided.

[0015] In one of the embodiments, the limiting slot is of a "r"-shape.

[0016] In one of the embodiments, the mounting support is provided with a cuboid-shaped limiting region at its end away from the adjusting spring. The latch is provided with a corresponding rectangular hole, which is sleeved on the cuboid-shaped limiting region.

[0017] In one of the embodiments, the spring cavity has a diameter smaller than that of the handle cavity. A

groove is provided around (or outside) a position of the spring cavity connected to the handle cavity. A rubber ring is arranged in the groove.

[0018] In one of the embodiments, the door or window lock with a concealable handle further includes a circlip. The spring cavity is provided with a circlip groove at its end close to the mounting support. The circlip is mounted in the circlip groove. An end of the circlip away from the latch is in contact with the fixing sleeve.

[0019] In one of the embodiments, the latch is fixed to the mounting support by a fixing screw. An end of the circlip away from the fixing screw is in contact with the fixing sleeve.

[0020] In one of the embodiments, the mounting support is provided with a screw hole at its end away from the adjusting spring. The latch is provided with a through hole. The fixing screw passes through the through hole and is locked into the screw hole.

[0021] In one of the embodiments, the housing includes a fixing sleeve and a fixing panel. The fixing sleeve and the fixing panel are integrally molded. The fixing panel is configured to fix the housing to a door panel.

[0022] In a second aspect, an embodiment of the present disclosure further provides a door or window lock with a concealable handle, which includes a housing, a latch component, and a handle component. The latch component includes an adjusting cylinder. The adjusting cylinder is provided with a positioning slot extending in an axial direction. The adjusting cylinder has an end portion protruding from the housing and fixed to the latch. The handle component includes a rotary handle and an elastic extendable block. The rotary handle is provided with a positioning protrusion which is slidably fitted in the positioning slot so that the rotary handle can be moved axially relative to the adjusting cylinder and cannot be rotated circumferentially. The elastic extendable block is arranged in the rotary handle and is configured to lock the relative position of the rotary handle relative to the adjusting cylinder in the axial direction so that the rotary handle is kept in the housing, or is configured to unlock the relative position of the rotary handle relative to the adjusting cylinder in the axial direction so that the rotary handle can be moved axially relative to the adjusting cylinder so as to protrude from the housing.

[0023] The embodiments of the present disclosure include the following advantageous effects.

[0024] In this technical solution, the rotary handle can be concealed by the cooperation of the rotary handle with the concealing part. When it is necessary to open the door, the rotary handle can be unlocked by the concealing part by rotating the lock core, so that the rotary handle is partially ejected out of the housing so as to be held by the user. When there is no need to open the door, the rotary handle can be pressed to be concealed in the housing, thereby ameliorating the problems of the prior art door locks with unconcealable handles which protrude outside so as to be easily damaged or cause potential safety hazards.

Brief Description of the Drawings

[0025] In order to more clearly illustrate technical solutions of the embodiments of the present disclosure or of the prior art, drawings required for use in the description of the embodiments or the prior art will be described briefly below. It is obvious that the drawings in the following description are merely illustrative of some embodiments of the present disclosure. It will be understood by those of ordinary skill in the art that other drawings can also be obtained from these drawings without any inventive effort.

FIG. 1 is an exploded view of a door or window lock with a concealable handle according to an embodiment of the present disclosure;

FIG. 2 is a schematic structural view of a rotary handle and an adjusting cylinder according to an embodiment of the present disclosure;

FIG. 3 is a schematic structural view of an elastic extendable block and a lock core according to an embodiment of the present disclosure;

FIG. 4 is a schematic structural view of a rotary lock disk according to an embodiment of the present disclosure;

FIG. 5 is a schematic structural view of an adjusting part according to an embodiment of the present disclosure;

FIG. 6 is a schematic structural view of a rotary handle according to an embodiment of the present disclosure;

FIG. 7 is a schematic structural view, from a first perspective, of a fixing sleeve according to an embodiment of the present disclosure;

FIG. 8 is a schematic structural view, from a second perspective, of a fixing sleeve according to an embodiment of the present disclosure; and

FIG. 9 is a schematic view showing mounting of a door or window lock according to an embodiment of the present disclosure.

[0026] Reference Numerals: housing 1, fixing sleeve 101, first boss 1011, second boss 1012, fixing panel 102, mounting hole 103, latch component 2, latch 201, adjusting part 202, handle component 3, rotary handle 301, concealing part 302, mounting cavity 304, lock core 305, adjusting cylinder 203, adjusting sleeve 204, "L"-shaped groove 2041, positioning pin 205, adjusting spring 206, mounting support 207, handle cavity 208, spring cavity 209, limiting slot 210, adjustment limiting hole 211, first

fixing limiting hole 306, second fixing limiting hole 212, elastic extendable block 307, push-out spring 308, positioning protrusion 309, positioning slot 310, first limiting block 311, second limiting block 312, return spring 313, insertion pin 3111, engaging base 3112, inclined restoring block 3113, shift block 3051, rotary lock head 3052, rotary lock disk 3053, shift lever 3054, shift lever groove 3055, first notch 2042, second notch 2043, groove 213, rubber ring 214, circlip 4, circlip groove 41, fixing screw 5, cuboid-shaped limiting region 6, rectangular hole 61, key 7.

Detailed Description of the Embodiments

[0027] The technical solutions of the embodiments of the present disclosure will be described below clearly and completely with reference to the accompanying drawings of the embodiments of the present disclosure. It is apparent that the embodiments to be described are some, but not all of the embodiments of the present disclosure.

[0028] All the other embodiments obtained by those of ordinary skill in the art in light of the embodiments of the present disclosure without inventive efforts will fall within the scope of the present disclosure as claimed.

[0029] It should be noted that all directional indications (such as up, down, left, right, front, back...) in the embodiments of the present disclosure are merely intended to explain, for example, the relative positional relationships and movements between components in a specific posture (as shown in the drawings). If the specific posture is changed, the directional indications will also be changed accordingly.

[0030] In the present disclosure, the terms "connect", "fix", and the like should be understood broadly unless otherwise expressly specified or defined. For example, connection may be fixed connection or detachable connection or integral connection, may be mechanical connection or electric connection, or may be direct coupling or indirect coupling via an intermediate medium or internal communication between two elements or mutual interaction between two elements, unless otherwise expressly defined. The specific meanings of the above-mentioned terms in the present disclosure can be understood by those of ordinary skill in the art according to specific situations.

[0031] In addition, the technical solutions of the various embodiments of the present disclosure can be combined with each other, provided that such combinations are implementable by those of ordinary skill in the art. When a combination of technical solutions is contradictory or not implementable, it should be considered that this combination of technical solutions does not exist and does not fall within the scope of the present disclosure as claimed.

First Embodiment:

[0032] Referring to FIGS. 1 to 9, an embodiment of the

present disclosure provides a door or window lock with a concealable handle, which includes a housing 1, a latch component 2, and a handle component 3. The housing 1 includes a fixing sleeve 101 and a fixing panel 102. The fixing sleeve 101 and the fixing panel 102 are integrally molded. The fixing panel 102 is configured to fix the housing 1 to a door panel.

[0033] The latch component 2 includes a latch 201 and an adjusting part 202. A mounting hole 103 is provided in the bottom of the fixing sleeve 101. The adjusting part 202 is arranged inside the fixing sleeve 101, and the adjusting part 202 has an adjusting end protruding from the fixing sleeve 101 through the mounting hole 103 and connected and fixed to the latch 201. The adjusting part 202 is configured to adjust the position of the latch 201.

[0034] The handle component 3 includes a rotary handle 301 and a concealing part 302. A mounting cavity 304 is provided in the top surface of the rotary handle 301. The concealing part 302 is arranged at the bottom of the mounting cavity 304. The concealing part 302 is circumferentially fixed to the adjusting part 202 and mounted inside the fixing sleeve 101. The concealing part 302 is configured to control the relative position of the rotary handle 301 relative to the fixing sleeve 101. Here, the rotary handle 301 is provided with a lock core 305. The lock core 305 is fixed inside the mounting cavity 304 and located above the concealing part 302. The bottom of the lock core 305 is engaged with the concealing part 302. When the rotary handle 301 is pressed to be concealed in the fixing sleeve 101, the lock core 305 is adjusted by the concealing part 302 to a locked state. When the lock core 305 is in an unlocked state, the rotary handle 301 is partially ejected out of the fixing sleeve 101 by the concealing part 302.

[0035] Optionally, in this embodiment, the adjusting part 202 includes an adjusting cylinder 203. One end of the adjusting cylinder 203 is fixedly connected to the latch 201, and the latch 201 is located below the adjusting cylinder 203. The rotary handle 301 is partially slidably fitted to the inner cavity of the adjusting cylinder 203 in a direction in which the rotary handle 301 is pressed or ejected, and the rotary handle 301 is fixed relative to the adjusting cylinder 203 in a direction of rotation of the rotary handle 301.

[0036] The adjusting part further includes an adjusting sleeve 204, a positioning pin 205, an adjusting spring 206, and a mounting support 207. The inner cavity of the adjusting cylinder 203 includes a spring cavity 209 and a handle cavity 208 configured to allow the handle component 3 to be mounted therein. The handle cavity 208 is configured such that the handle component 3 is mounted therein. The spring cavity 209 is arranged at the bottom of the handle cavity 208. An end of the spring cavity 209 away from the handle cavity 208 is in an open structure. A limiting slot 210 is provided in the side wall of the spring cavity 209. The adjusting sleeve 204 is sleeved outside the spring cavity 209. The adjusting spring 206 is arranged in the spring cavity 209. One of the ends of

the mounting support 207 is brought into contact with the adjusting spring 206. An adjustment limiting hole 211 is provided in the end of the mounting support 207 in contact with the adjusting spring 206. The positioning pin 205 passes through both the limiting slot 210 and the adjustment limiting hole 211. The adjusting sleeve 204 is fixedly assembled with the fixing sleeve 101 to form an "L"-shaped groove 2041 (See FIGS. 7 and 8 for details. A first boss 1011 and a second boss 1012 opposite to each other and both being in a tile shape are arranged on the inner side surface of the bottom of the fixing sleeve 101, and the "L"-shaped groove 2041 is formed by the first boss 1011 and the second boss 1012 together with the adjusting sleeve 204). The "L"-shaped groove 2041 is configured to limit a path of movement of the positioning pin 205. The other end of the mounting support 207 away from the adjusting spring 206 is fixedly connected to the latch 201.

[0037] Optionally, the mounting cavity 304 is provided as a hollow cylindrical structure with an upper opening. A first fixing limiting hole 306 is provided in a side wall close to the bottom of the mounting cavity 304. A second fixing limiting hole 212 is provided at a corresponding position of the handle cavity 208. The concealing part 302 is provided with an elastic extendable block 307. The elastic extendable block 307 is fixed at the inner bottom of the mounting cavity 304 and is slidably fitted in the first fixing limiting hole 306. The lock core 305 is engaged and fixed on the top of the elastic extendable block 307. The lock core 305 is configured to control an extended or retracted state of the elastic extendable block 307. A push-out spring 308 is arranged between the outer bottom of the mounting cavity 304 and the inner bottom of the handle cavity 208. A positioning protrusion 309 is arranged on an outer side wall of the mounting cavity 304. A positioning slot 310 extending in the direction in which the rotary handle 301 is pressed or ejected is provided at a corresponding position of the handle cavity 208. The positioning protrusion 309 fixes the rotary handle 301 in the positioning slot 310. Synchronous movements of the rotary handle 301 and the adjusting part 202 are limited by the positioning protrusion 309 and the positioning slot 310.

[0038] Optionally, the elastic extendable block 307 includes a first limiting block 311, a second limiting block 312, and a return spring 313. The first limiting block 311 is provided with an insertion pin 3111, an engaging base 3112, and an inclined restoring block 3113. The second limiting block 312 is in the same structure as the first limiting block 311. The first limiting block 311 and the second limiting block 312 are arranged opposite to each other. The return spring 313 has two ends simultaneously sleeved around the insertion pins 3111 of the first limiting block 312 and the second limiting block 312. The engaging base 3112 is engaged and fixed in the first fixing limiting hole 306 to lock the rotary handle 301 to the adjusting cylinder 203. The bottom of the lock core 305 is provided with a shift block 3051. The shift block 3051 is configured

to shift the inclined restoring blocks 3113 so that the first limiting block 311 and the second limiting block 312 are moved towards each other in opposite directions to unlock the rotary handle 301 from the adjusting cylinder 203.

[0039] Optionally, the lock core 305 includes a rotary lock head 3052 and a rotary lock disk 3053. The rotary lock head 3052 is provided with a key insertion hole (not shown). A shift lever 3054 is arranged at the bottom of the rotary lock head 3052. A shift lever groove 3055 is provided in a surface of the rotary lock disk 3053 close to the shift lever 3054. The shift lever 3054 is plugged and fixed in the shift lever groove 3055. The shift block 3051 is fixed at the bottom of the rotary lock disk 3053. The rotary lock head 3052 and the rotary lock disk 3053 are moved synchronously under the action of the shift lever 3054 and the shift lever groove 3055.

[0040] Optionally, fixing screw holes (not shown) are provided in the fixing panel 102. At least two fixing screw holes are provided. A first boss 1011 and a second boss 1012 are arranged on the inner side wall of the fixing sleeve 101 at positions corresponding to the adjusting sleeve 204. The adjusting sleeve 204 has a cylindrical structure opened at both ends. A first notches 2042 corresponding to the first boss 1011 and the second boss 1012 is provided in the side wall of the adjusting sleeve 204. A second notch 2043 is provided beside the first notch 2042. The second notch 2043 has a width greater than or equal to a diameter of the positioning pin 205, and the second notch 2043 has a height lower than that of the first notch 2042. The "L"-shaped groove 2041 described above is formed by the first notch 2042, the second notch 2043, together with one of the first boss 1011 and the second boss 1012. Two "L"-shaped grooves 2041 are provided.

[0041] Optionally, the limiting slot 210 is of a "Γ"-shape.

[0042] Optionally, the spring cavity 209 has a diameter smaller than that of the handle cavity 208. A groove 213 is provided around a portion of the spring cavity 209 connected to the handle cavity 208. A rubber ring 214 is arranged in the groove 213.

[0043] Optionally, this door or window lock with a concealable handle further includes a circlip 4. The spring cavity 209 is provided with a circlip groove 41 at its end close to the mounting support 207. The circlip 4 is mounted in the circlip groove 41. An end of the circlip 4 away from the latch 201 is brought into contact with the fixing sleeve 101.

[0044] The latch 201 is fixed to the mounting support 207 by a fixing screw 5. An end of the circlip 4 away from the fixing screw 5 is in contact with the fixing sleeve 101. Further, the mounting support 207 is provided with a screw hole at its end away from the adjusting spring 206. The latch 201 is provided with a through hole. The fixing screw 5 passes through the through hole and is locked into the screw hole.

[0045] Optionally, the mounting support 207 is provided with a cuboid-shaped limiting region 6 at its end away

from the adjusting spring 206. The latch 201 is provided with a corresponding rectangular hole 61. The rectangular hole 61 is sleeved on the cuboid-shaped limiting region 6. The mounting support 207 and the latch 201 can be fixed circumferentially to each other by fitting the cuboid-shaped limiting region 6 in the rectangular hole 61, so that the latch 201 is driven to rotate synchronously when the mounting support 207 rotates.

10 Operating Principle:

[0046] A key 7 is inserted into the lock core 305. When the key 7 is turned, the key 7 will drive the lock core 305 to shift the elastic extendable block 307. In other words, the inclined restoring blocks 3113 of the first limiting block 311 and the second limiting block 312 are pushed by the shift block 3051, so that the first limiting block 311 and the second limiting block 312 are moved towards each other in opposite directions. At this time, the engaging bases 3112 of the first limiting block 311 and the second limiting block 312 are retracted inwardly and then unfixed from the second fixing limiting hole 212, respectively. At the same time, the rotary handle 301 is pushed out of the surface of the fixing sleeve 101 under the action of the push-out spring 308. At this time, the latch 201 may be controlled by rotating the rotary handle 301 by the following control process. In the initial state, the latch 201 and the rotary handle 301 are both in a horizontal state. When the rotary handle 301 is rotated to a position at an angle of 90 degrees relative to the horizontal line, the latch 201 is also positioned at an angle of 90 degrees and limits the position of the door panel. At this time, the internal positioning pin 205 in this door or window lock is rotated by 90 degrees along a path defined by the bottom horizontal groove position of the "L"-shaped groove formed by the adjusting sleeve 204 and the housing 1.

[0047] Further, the rotary handle 301 is rotated to a position at an angle of 180 degrees from the initial state. During this process, the internal positioning pin 205 will be pushed by the projecting blocks inside the housing 1 into the limiting slot 210 and then be positioned by the limiting slot 210.

[0048] When the adjustment of the latch 201 is completed and the rotary handle 301 needs to be concealed, the top of the rotary handle 301 is simply pressed, and then the handle component 3 is moved downward by the positioning effect of the positioning protrusion 309 and the positioning slot 310 until the engaging bases 3112 of the first limiting block 311 and the second limiting block 312 reach the position of the second fixing limiting hole 212, and the engaging bases 3112 are unblocked by the inner wall of the handle cavity 208 and then are protruded outward under the action of the return spring 313. At this time, the shift block 3051 is also pushed by the inclined restoring blocks 3113 of the first limiting block 311 and the second limiting block 312 to drive the lock core 305 to rotate to the initial position.

[0049] The door or window lock according to the em-

bodiment of the present disclosure allows the rotary handle 301 to be concealed by the cooperation of the rotary handle 301 with the concealing part 302. When it is necessary to open the door, the rotary handle 301 can be unlocked by the concealing part 302 by rotating the lock core 305, so that the rotary handle 301 is partially ejected out of the housing 1 so as to be held by the user. When there is no need to open the door, the rotary handle 301 can be pressed to be concealed in the housing 1, thereby ameliorating the problems of the prior art door locks with unconcealable handles which protrude outside so as to be easily damaged or cause potential safety hazards. This door or window lock with a concealable handle is designed by making ingenious use of the characteristics of the respective structures, has a compact overall structure, can be adjusted effectively and conveniently, and therefore is suitable for widespread use in various places.

Second Embodiment:

[0050] Referring to FIGS. 1 to 3, an embodiment of the present disclosure provides a door or window lock with a concealable handle, which includes a housing 1, a latch component 2, and a handle component 3. The latch component 2 includes an adjusting cylinder 203. The adjusting cylinder 203 is provided with a positioning slot 310 extending in an axial direction. The adjusting cylinder 203 has an end portion protruding from the housing 1 and fixed to the latch 201. The handle component 3 includes a rotary handle 301 and an elastic extendable block 307. The rotary handle 301 is provided with a positioning protrusion 309. The positioning protrusion 309 is slidably fitted in the positioning slot 310 so that the rotary handle 301 can be moved axially relative to the adjusting cylinder 203 and cannot be rotated circumferentially. The elastic extendable block 307 is arranged in the rotary handle 301 and is configured to lock the relative position of the rotary handle 301 relative to the adjusting cylinder 203 in the axial direction so that the rotary handle 301 is kept in the housing 1, or is configured to unlock the relative position of the rotary handle 301 relative to the adjusting cylinder 203 in the axial direction so that the rotary handle 301 can be moved axially relative to the adjusting cylinder 203 so as to protrude from the housing 1.

[0051] The door or window lock according to this embodiment is operated based on substantially the same principle and achieves substantially the same technical effects as those in the first embodiment, and therefore a detailed description is omitted here.

Industrial Applicability

[0052] In summary, the door or window lock according to the present disclosure allows the rotary handle to be concealed. When it is necessary to open the door, the rotary handle can be unlocked by the concealing part by rotating the lock core, so that the rotary handle is partially ejected out of the housing so as to be held by the user.

When there is no need to open the door, the rotary handle can be pressed to be concealed in the housing, thereby ameliorating the problems of the prior art door locks with unconcealable handles which protrude outside so as to be easily damaged or cause potential safety hazards.

Claims

1. A door or window lock with a concealable handle, comprising: a handle component, a latch component, and a housing, **characterized in that** the handle component comprises a rotary handle and a concealing part, wherein the rotary handle is provided with a mounting cavity, the concealing part is arranged at a bottom of the mounting cavity, and the concealing part is fixed to the latch component and mounted inside the housing; and the concealing part is configured to control a position of the rotary handle relative to the housing, wherein the rotary handle is provided with a lock core, wherein the lock core is fixed inside the mounting cavity and located above the concealing part, and a bottom of the lock core is engaged with the concealing part, wherein when the rotary handle is pressed to be concealed in the housing, the lock core is adjusted by the concealing part to a locked state; and when the lock core is in an unlocked state, the rotary handle is partially ejected out of the housing by the concealing part.
2. The door or window lock with a concealable handle according to claim 1, wherein the latch component comprises a latch and an adjusting part, wherein a mounting hole is provided in a bottom of the housing, the adjusting part is arranged inside the housing, and the adjusting part protrudes from the housing through the mounting hole and is connected fixedly to the latch; and the adjusting part is configured to adjust a position of the latch.
3. The door or window lock with a concealable handle according to claim 2, wherein the adjusting part comprises an adjusting cylinder, wherein one end of the adjusting cylinder is fixedly connected to the latch, the rotary handle is partially fitted into an inner cavity of the adjusting cylinder in such a way that the rotary handle is slidable in a direction in which the rotary handle is pressed or ejected, and the rotary handle is fixed relative to the adjusting cylinder in a direction of rotation of the rotary handle.
4. The door or window lock with a concealable handle according to claim 2, further comprising an adjusting sleeve, a positioning pin, an adjusting spring, and a mounting support, wherein an inner cavity of the adjusting cylinder comprises a spring cavity and a handle cavity configured to allow the handle component

- to be mounted therein, wherein the handle cavity is configured to allow the handle component to be mounted therein; the spring cavity is arranged at a bottom of the handle cavity, an end of the spring cavity away from the handle cavity is in an open structure, and a limiting slot is provided in a side wall of the spring cavity; the adjusting sleeve is sleeved outside the spring cavity, the adjusting spring is arranged in the spring cavity, one of ends of the mounting support is in contact with the adjusting spring, an adjustment limiting hole is provided in the end of the mounting support in contact with the adjusting spring, and the positioning pin passes through both the limiting slot and the adjustment limiting hole; the adjusting sleeve is fixedly assembled with the housing, so as to form an "L"-shaped groove, wherein the "L"-shaped groove is configured to limit a path of movement of the positioning pin; and an end of the mounting support away from the adjusting spring is fixedly connected to the latch.
5. The door or window lock with a concealable handle according to claim 4, wherein the mounting cavity is provided in a hollow cylindrical structure with an upper opening, and a first fixing limiting hole is provided in a side wall close to a bottom of the mounting cavity; a second fixing limiting hole is provided at a corresponding position of the handle cavity; and the concealing part is provided with an elastic extendable block, wherein the elastic extendable block is fixed at an inner bottom of the mounting cavity and is slidably fitted in the first fixing limiting hole, and the lock core is engaged fixedly on a top of the elastic extendable block; and the lock core is configured to control an extended or retracted state of the elastic extendable block.
 6. The door or window lock with a concealable handle according to claim 5, wherein a push-out spring is arranged between an outer bottom of the mounting cavity and an inner bottom of the handle cavity; and a positioning protrusion is arranged on an outer side wall of the mounting cavity, a positioning slot extending in the direction, in which the rotary handle is pressed or ejected, is provided at a corresponding position of the handle cavity, and the positioning protrusion makes the rotary handle fixed in the positioning slot.
 7. The door or window lock with a concealable handle according to claim 5, wherein the elastic extendable block comprises a first limiting block, a second limiting block, and a return spring, wherein the first limiting block is provided with an insertion pin, an engaging base, and an inclined restoring block, the second limiting block is in a same structure as the first limiting block, the first limiting block and the second limiting block are arranged opposite to each other, the return spring has two ends simultaneously sleeved on insertion pins of the first limiting block and the second limiting block, and the engaging base is engaged fixedly in the first fixing limiting hole, so as to lock the rotary handle to the adjusting cylinder; and a bottom of the lock core is provided with a shift block, wherein the shift block is configured to shift inclined restoring blocks, so that the first limiting block and the second limiting block are moved towards each other in opposite directions, so as to unlock the rotary handle from the adjusting cylinder.
 8. The door or window lock with a concealable handle according to claim 7, wherein the lock core comprises a rotary lock head and a rotary lock disk, wherein the rotary lock head is provided with a key insertion hole, a shift lever is arranged at a bottom of the rotary lock head, a shift lever groove is provided in a surface of the rotary lock disk close to the shift lever, and the shift lever is plugged fixedly in the shift lever groove; the shift block is fixed at the bottom of the rotary lock disk; and the rotary lock head and the rotary lock disk are moved synchronously under an action of the shift lever and the shift lever groove.
 9. The door or window lock with a concealable handle according to claim 4, wherein two projecting blocks are arranged on an inner side wall of the housing at positions corresponding to the adjusting sleeve; the adjusting sleeve is in a cylindrical structure opened at both ends, first notches corresponding to the two projecting blocks is provided in a side wall of the adjusting sleeve, second notches are provided beside the first notches, each of the second notches has a width greater than or equal to a diameter of the positioning pin, and each of the second notches has a height lower than that of corresponding first notch; and the "L"-shaped groove is formed by the first notch, the second notch, and one of the two projecting blocks, and two "L"-shaped grooves are provided.
 10. The door or window lock with a concealable handle according to claim 4, wherein the limiting slot is of a "Γ"-shape.
 11. The door or window lock with a concealable handle according to any one of claims 4 to 10, wherein a cuboid-shaped limiting region is provided at an end of the mounting support away from the adjusting spring, and the latch is provided with a corresponding rectangular hole, wherein the rectangular hole is sleeved on the cuboid-shaped limiting region.
 12. The door or window lock with a concealable handle according to any one of claims 4 to 10, wherein the spring cavity has a diameter smaller than that of the handle cavity, a groove is provided outside a portion

of the spring cavity connected to the handle cavity,
and a rubber ring is arranged in the groove.

housing.

13. The door or window lock with a concealable handle according to any one of claims 4 to 10, further comprising a circlip, wherein a circlip groove is provided at an end of the spring cavity close to the mounting support, the circlip is mounted in the circlip groove, and an end of the circlip away from the latch is in contact with the fixing sleeve. 5
10
14. The door or window lock with a concealable handle according to claim 13, wherein the latch is fixed to the mounting support by a fixing screw, and an end of the circlip away from the fixing screw is in contact with the fixing sleeve. 15
15. The door or window lock with a concealable handle according to claim 14, wherein a screw hole is provided at an end of the mounting support away from the adjusting spring, the latch is provided with a through hole, and the fixing screw passes through the through hole and is locked into the screw hole. 20
16. The door or window lock with a concealable handle according to claim 1, wherein the housing comprises a fixing sleeve and a fixing panel, wherein the fixing sleeve and the fixing panel are integrally molded, and the fixing panel is configured to fix the housing to a door panel. 25
30
17. A door or window lock with a concealable handle, **characterized by** comprising:

a housing; 35

a latch component, comprising an adjusting cylinder, wherein the adjusting cylinder is provided with a positioning slot extending in an axial direction, and the adjusting cylinder has an end portion protruding from the housing and fixed to a latch; and 40

a handle component, comprising a rotary handle and an elastic extendable block, wherein the rotary handle is provided with a positioning protrusion, wherein the positioning protrusion is slidably fitted in the positioning slot, so that the rotary handle is able to be moved axially relative to the adjusting cylinder and is not able to be rotated circumferentially, and the elastic extendable block is arranged in the rotary handle and is configured to lock a position of the rotary handle relative to the adjusting cylinder in the axial direction, so that the rotary handle is kept in the housing, or is configured to unlock the position of the rotary handle relative to the adjusting cylinder in the axial direction, so that the rotary handle is able to be moved axially relative to the adjusting cylinder, so as to protrude from the 45
50
55

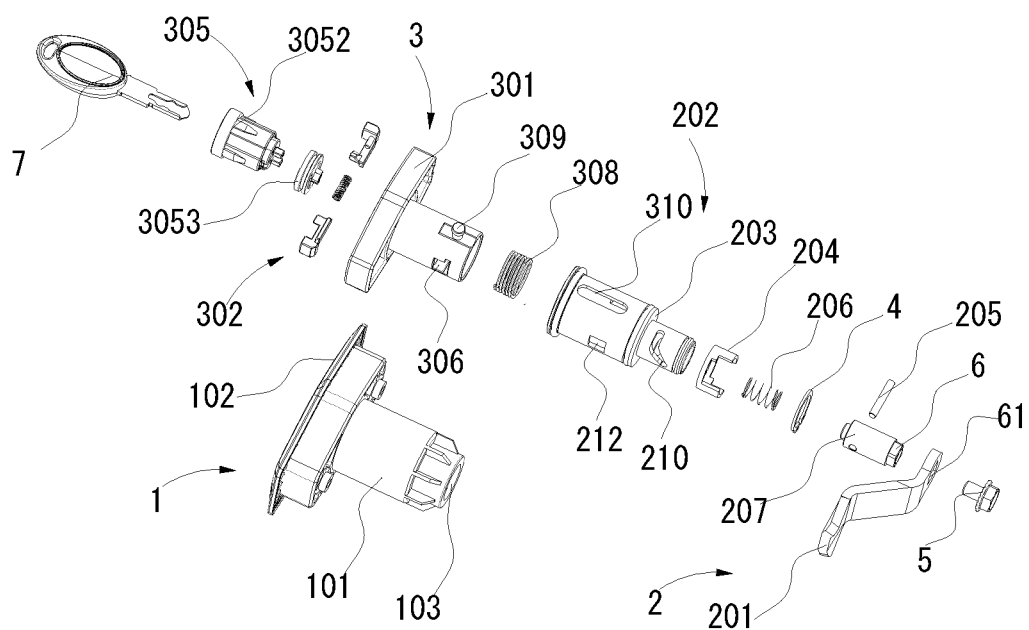


FIG. 1

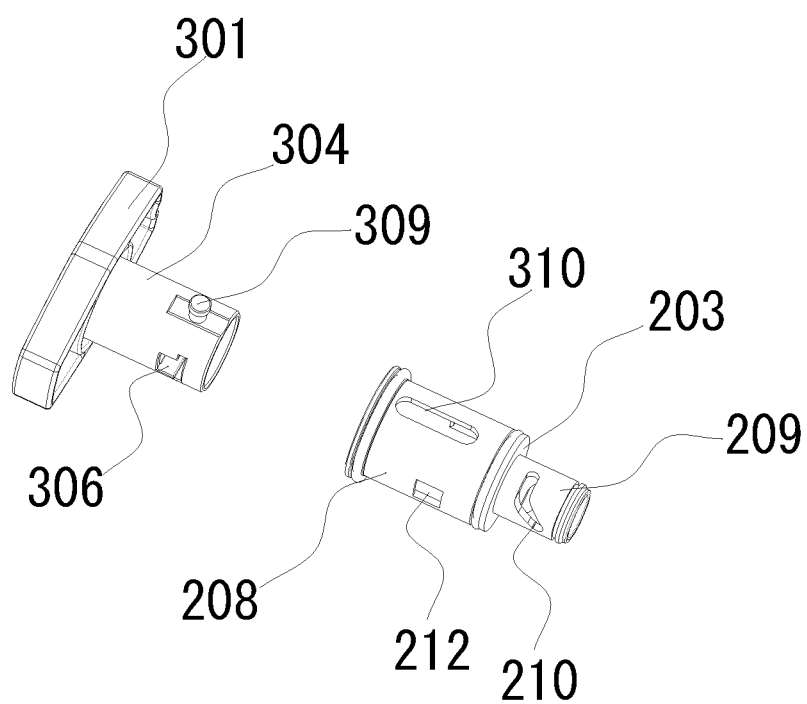


FIG. 2

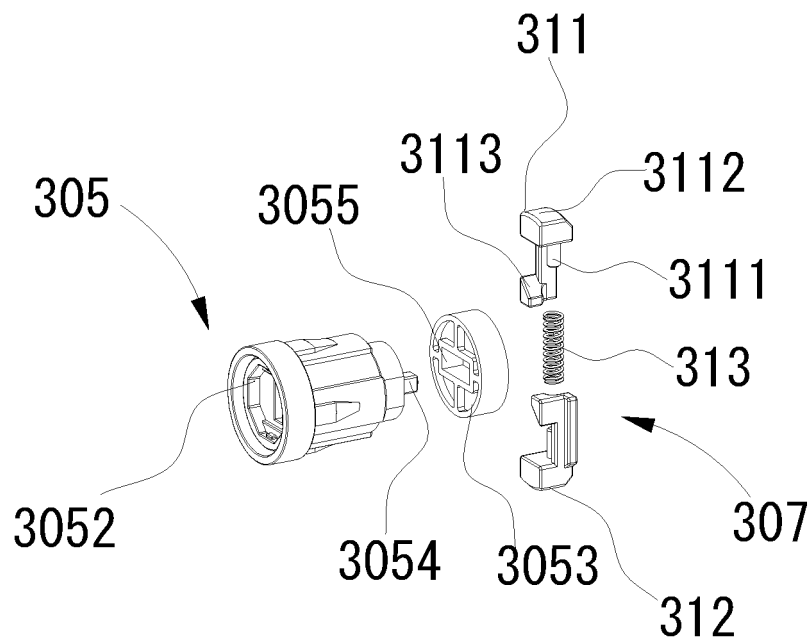


FIG. 3

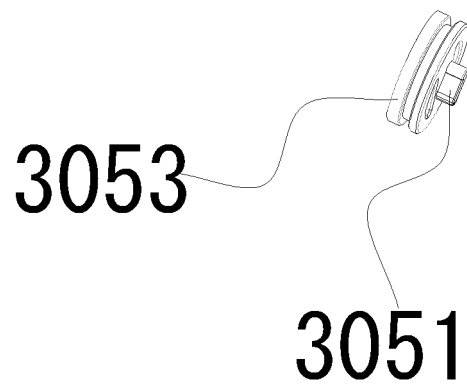


FIG. 4

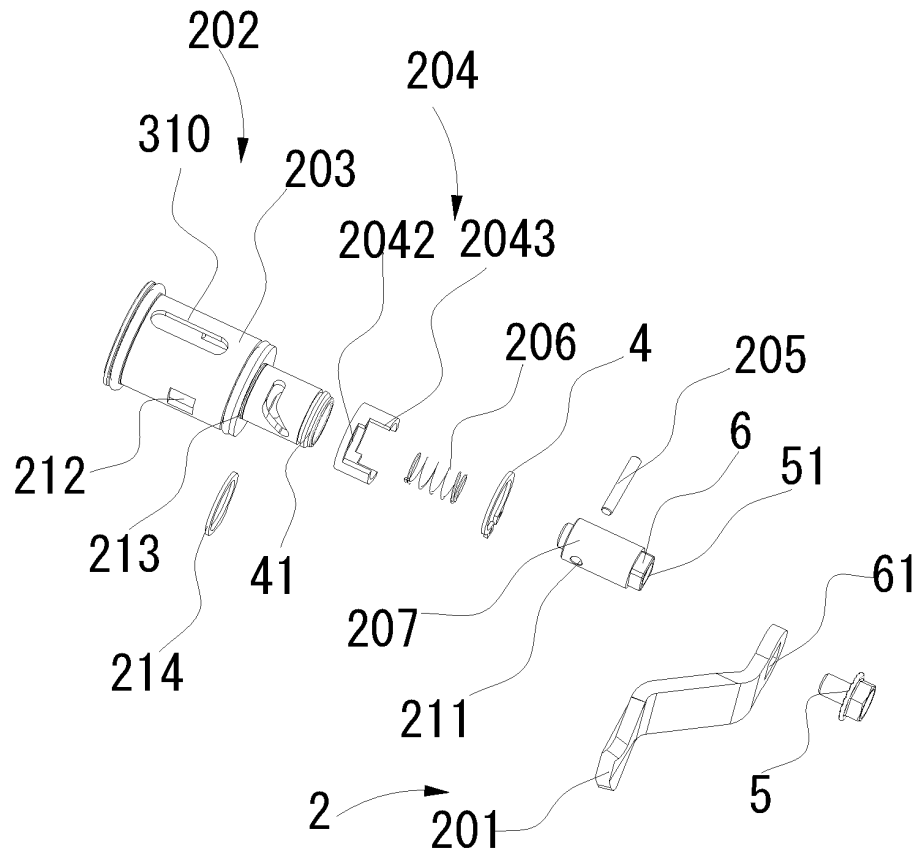


FIG. 5

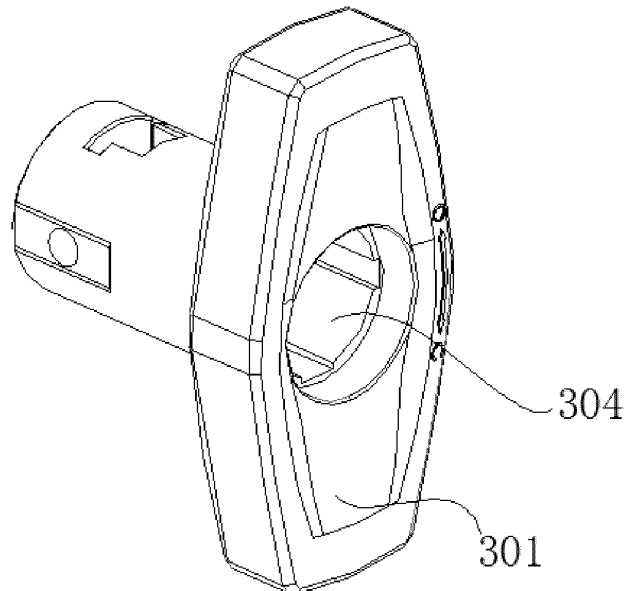


FIG. 6

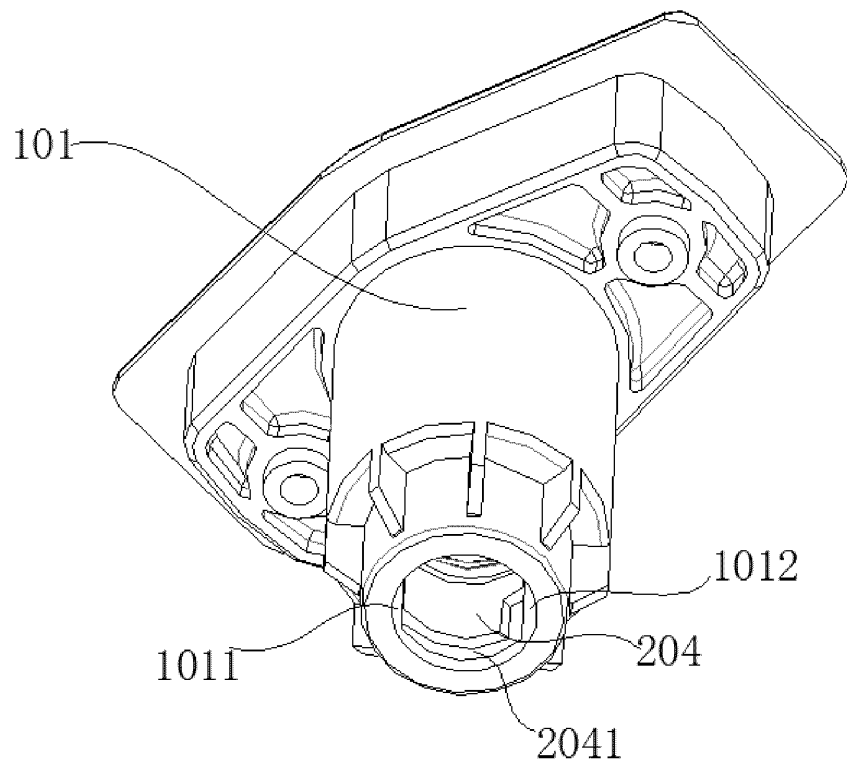


FIG. 7

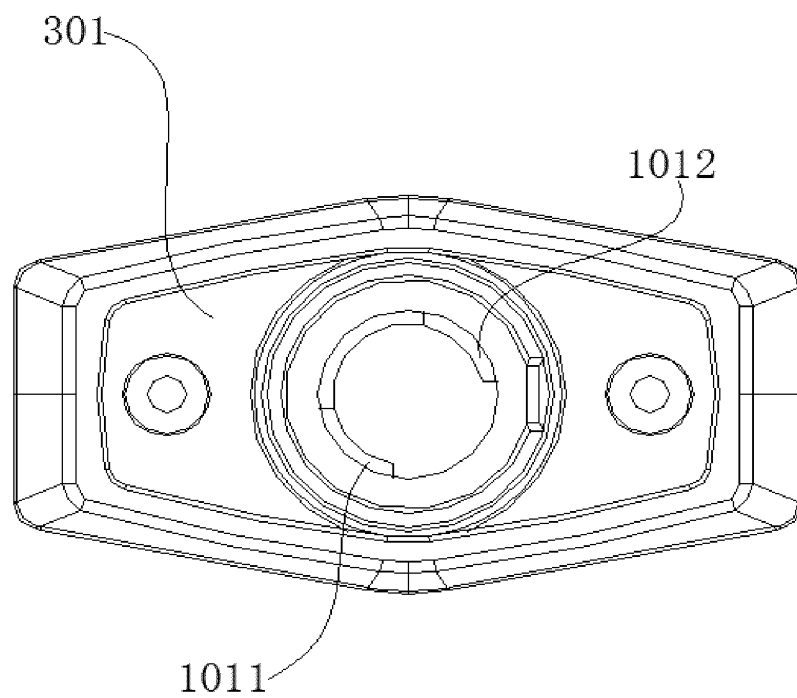


FIG. 8

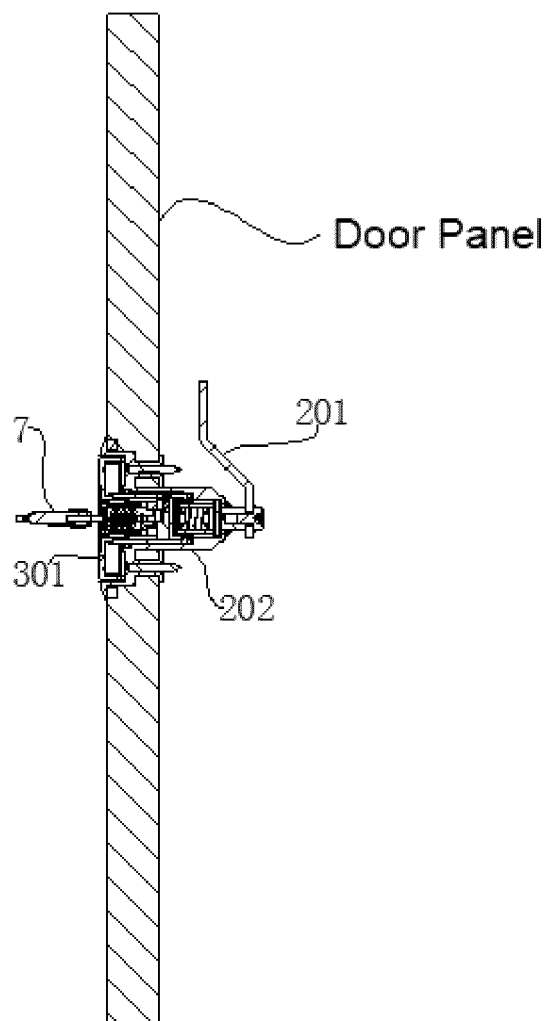


FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2020/134635

A. CLASSIFICATION OF SUBJECT MATTER

E05B 5/00(2006.01)i; E05B 3/00(2006.01)i; E05B 15/00(2006.01)i; E05B 15/10(2006.01)i; E05B 13/10(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E05B5/-;E05B3/-;E05B15/-;E05B13/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS, DWPI, SIPOABS, CNTXT, 中国期刊网全文数据库; 江苏三乔智能科技有限公司, 肖和平, 把手, 执手, 手柄, 锁把, 隐藏, 隐形, 收回, 缩回, 伸缩, 弹出, 弹簧, 顶, 按压, handle?, pop 2d out, eject+, telescopic+, retract+, door?, lock+, case, housing?, clamp+, press+, push+, spring?, rotat+, bolt?, latch?+, cylinder

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 111173367 A (JIANGSU SANQIAO INTELLIGENT TECHNOLOGY CO., LTD.) 19 May 2020 (2020-05-19) claims 1-10, description, embodiments section and figure 5	1-17
PX	CN 211874143 U (JIANGSU SANQIAO INTELLIGENT TECHNOLOGY CO., LTD.) 06 November 2020 (2020-11-06) claims 1-10, description embodiments section and figure 5	1-17
X	CN 105401787 A (TAKIGEN MANUFACTURING CO., LTD.) 16 March 2016 (2016-03-16) description, specific embodiments, and figures 1-28	1-3, 16-17
Y	CN 105401787 A (TAKIGEN MANUFACTURING CO., LTD.) 16 March 2016 (2016-03-16) description, specific embodiments, and figures 1-28	4-15
X	CN 105401788 A (TAKIGEN MANUFACTURING CO., LTD.) 16 March 2016 (2016-03-16) description, specific embodiments, and figures 1-28	1-3, 16-17
Y	CN 105401788 A (TAKIGEN MANUFACTURING CO., LTD.) 16 March 2016 (2016-03-16) description, specific embodiments, and figures 1-28	4-15

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“E” earlier application or patent but published on or after the international filing date

“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

“O” document referring to an oral disclosure, use, exhibition or other means

“P” document published prior to the international filing date but later than the priority date claimed

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

19 February 2021

Date of mailing of the international search report

08 March 2021

Name and mailing address of the ISA/CN

China National Intellectual Property Administration (ISA/
CN)
No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing
100088
China

Authorized officer

Facsimile No. (86-10)62019451

Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2020/134635

5

10

15

20

25

30

35

40

45

50

55

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 209556661 U (JIANGSU SANQIAO INTELLIGENT TECHNOLOGY CO., LTD.) 29 October 2019 (2019-10-29) description, paragraphs 0029-0041, and figures 1-3	4-15
A	CN 2075681 U (LI, Shitong) 24 April 1991 (1991-04-24) entire document	1-17
A	JP 07305543 A (SANPOUROTSUKU K. K.) 21 November 1995 (1995-11-21) entire document	1-17
A	FR 2644197 A1 (OJMAR S.A.) 14 September 1990 (1990-09-14) entire document	1-17

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2020/134635

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 111173367 A	19 May 2020	None	
CN 211874143 U	06 November 2020	None	
CN 105401787 A	16 March 2016	TW I563156 B	21 December 2016
		JP 5982440 B2	31 August 2016
		JP 2016056534 A	21 April 2016
		KR 20160030031 A	16 March 2016
		TW 201610281 A	16 March 2016
		KR 101728106 B1	18 April 2017
		CN 105401787 B	31 October 2017
CN 105401788 A	16 March 2016	JP 5982441 B2	31 August 2016
		CN 105401788 B	31 October 2017
		JP 2016056535 A	21 April 2016
		KR 20160030032 A	16 March 2016
		TW I563157 B	21 December 2016
		KR 101728109 B1	18 April 2017
		TW 201610282 A	16 March 2016
CN 209556661 U	29 October 2019	CN 108915430 A	30 November 2018
CN 2075681 U	24 April 1991	None	
JP 07305543 A	21 November 1995	JP H07305543 A	21 November 1995
		JP 2738649 B2	08 April 1998
FR 2644197 A1	14 September 1990	DE 3910967 C2	29 September 1994
		DE 3910967 A1	11 October 1990
		ES 2008987 A6	16 August 1989
		FR 2644197 B1	31 December 1992

Form PCT/ISA/210 (patent family annex) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 202010072147 [0001]