



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
06.06.2012 Bulletin 2012/23

(51) Int Cl.:
E05B 65/10^(2006.01) E05C 9/04^(2006.01)

(21) Application number: **11192132.6**

(22) Date of filing: **06.12.2011**

(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

(72) Inventor: **Yang, Min**
Zhongshan, Guangdong (CN)

(74) Representative: **Michalski, Stefan**
Michalski Hüttermann & Partner
Patentanwälte
Neuer Zollhof 2
40221 Düsseldorf (DE)

(30) Priority: **06.12.2010 CN 201020642876 U**

(71) Applicant: **Guli Security Products Limited**
Xiaolan
Zhongshan
Guangdong (CN)

(54) **Lockset**

(57) The present disclosure discloses a lockset including a base defining a bolt opening, a latch mechanism movably connected to the base, a pulling mechanism rotatably connected to the base, and a lock mechanism arranged in the bolt opening, wherein the pulling mechanism is driven rotating by the latch mechanism, the lock mechanism is driven protruding out or retracting from the bolt opening, and the latch mechanism sliding along a direction perpendicular to the sliding direction of the lock mechanism. The lockset is easy to install and maintain.

anism is driven rotating by the latch mechanism, the lock mechanism is driven protruding out or retracting from the bolt opening, and the latch mechanism sliding along a direction perpendicular to the sliding direction of the lock mechanism. The lockset is easy to install and maintain.

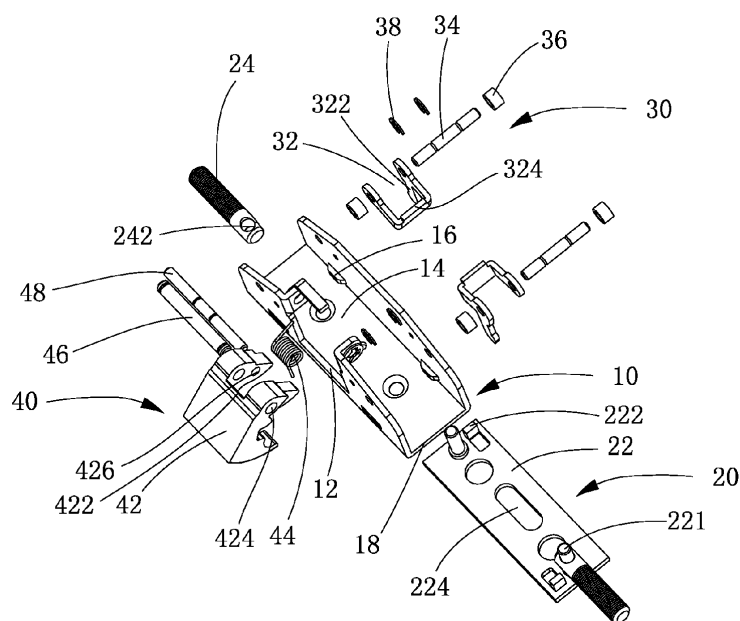


FIG. 1

Description

FIELD OF THE INVENTION

[0001] The present disclosure relates to door and window accessories, and more particularly, to a lockset.

BACKGROUND OF THE INVENTION

[0002] Locks used in escape tunnels can be quickly unlocked indoors in emergency. The conventional locks of this type are mostly with single lock point, which are easy to become out of operation when the door is high or is blew heavily by winds. The locks with additional lock points may avoid the above problems. However, the locks with additional lock points cannot be installed inversely, when the using environment is complicated or the install condition changes, the locks may not be installed, which brings great inconvenience in installing, maintaining the locks. Meanwhile, it is not easy to open the doors quickly to escape, thus increasing the time cost in escaping in the emergency of fire disaster or panic event.

[0003] Meanwhile, the conventional locks with additional lock points used in escape tunnel usually use link mechanism having complicated structure, great amount of components, thus the generality is very weak, and the requirement of assembling the locks is very high.

SUMMARY OF THE INVENTION

[0004] It is an object of the present invention to provide a lockset which is easy to install and maintain..

[0005] One aspect of the present disclosure includes a lockset. The lockset includes a base defining a bolt opening, a latch mechanism movably connected to the base, a pulling mechanism rotatably connected to the base, and a lock mechanism arranged in the bolt opening, wherein the pulling mechanism is driven rotating by the latch mechanism, the lock mechanism is driven protruding out or retracting from the bolt opening, and the latch mechanism sliding along a direction perpendicular to the sliding direction of the lock mechanism.

[0006] Other aspects of the present disclosure can be understood by those skilled in the art in light of the description, the claims, and the drawings of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is an explode view of a lockset consistent with the disclosed embodiments;.

[0008] FIG. 2 illustrates the structure of a lockset consistent with the disclosed embodiments;.

[0009] FIG. 3 is a schematic view of a lockset in lock state consistent with the disclosed embodiments;.

[0010] FIG. 4 is a cross-sectional view taken along the cross-section line H-H in FIG.3;

[0011] FIG. 5. is a cross-sectional view taken along the cross-section line G-G in FIG.3;

[0012] FIG. 6. is a schematic view of a lockset in unlock state consistent with the disclosed embodiments;

[0013] FIG. 7. is a cross-sectional view taken along the cross-section line H-H in FIG.6;

[0014] FIG. 8. is a cross-sectional view taken along the cross-section line G-G in FIG.6;

[0015] FIG. 9. is a schematic view of a lockset in unlock state consistent with the disclosed embodiments;

[0016] FIG. 10. is a cross-sectional view taken along the cross-section line H-H in FIG.9;

[0017] FIG. 11. is a cross-sectional view taken along the cross-section line G-G in FIG.9.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0018] The present disclosure will be described in detail with the following embodiments and drawings.

[0019] As the Figs. 1~2 show, a lockset includes a base 10 defining a bolt opening 12, a latch mechanism 20 movably connected with the base 10, a pulling mechanism 30 rotatably disposed in the base 10 and a lock mechanism 40 arranged in the bolt opening 12. The pulling mechanism 30 is driven rotating by the latch mechanism 20, the lock mechanism 40 is driven protruding out from or retracting the bolt opening 12, and the latch mechanism 20 protrudes out or retracts in the base 10 along the direction perpendicular to the direction of the lock mechanism 40 protruding or retracting.

[0020] The bolt opening 12 is defined in a sidewall of the base 10. The base 10 defining a groove 14 extending inward the sidewall of the base 10. In the illustrated embodiment, a limiting protrusion 16 is disposed on the sidewall of the base 10 to limit the move path of the latch mechanism 20. Along the direction of the latch mechanism 20 protruding out, openings 18 are defined on opposite sides of the base 10 for receiving the latching mechanism 20, the latching mechanism 20 is capable of sliding in the openings 18. In a preferred embodiment, the base 10 defines a U-shaped groove, the latch mechanism 20 may be capable of sliding in the U-shaped groove.

[0021] The latch mechanism 20 is received in the groove 14, and includes a sliding plate 22 and a driving rod 24 connected to the sliding plate 22. In the illustrated embodiment, the sliding plate 22 contact the bottom of the groove 14 closely, the driving rod 24 is arranged along the direction of the latch mechanism 20 protruding out and retracting. More specifically, two pins 221 are disposed at the edge of the sliding plate 22 and opposite to each other, two holes 242 corresponding to the pins 221 are defined in the driving rod 24, and the driving rod 24 connects with the sliding plate 22 by inserting the pins 221 in the holes 242. The driving rod 24 passes through the openings 18 for the users pushing or pulling. Besides, the sliding plate 22 includes a protrusion 222 disposed on an end of the pins 221. The protrusion 222 contacts

the pulling mechanism 30. As for the base 10 with a limiting protrusion 16, the protrusion 222 pushed against the limiting protrusion 16 to limit the move path of the sliding plate 22. The number of protrusion 222 may be two, which can be arranged at two ends of the diagonal of the sliding plate 22 to improve the stability of the sliding plate 22. The two protrusions 222 can also be arranged at one side of the sliding plate 22. Moreover, a kidney shaped limiting hole 224 is defined on the sliding plate 22, and the sliding plate 22 can be fixed to the base 10 by passing a bolt through the limiting hole 224, such that the move path of the sliding plate 22 is limited in the scope of the limiting hole 224.

[0022] The pulling mechanism 30 includes a pulling claw 32 and a spindle 34 for fixing the pulling claw 32 on the base 10. In the illustrated embodiment, the spindle 34 passes through the pulling claw 32, and the spindle 34 is matched up with a shaft sleeve 36 and a rand 38 to be fixed on the two opposite wall of the base 10, making the pulling claw 32 connected to the protrusion 222 and lock mechanism 40 respectively. The number of the pulling mechanism 30 may be two. Specifically, the pulling claw 32 includes an pulling arm 322 and a lock arm 324 connect to the pulling arm 322, the pulling arm 322 connects with the sliding plate 22 via the protrusion 222, the lock arm 324 connect with the lock mechanism 40. The tail end of the pulling arm 322 is arrange on the protrusion 222 to form a poking connection, therefore pushing or pulling the driving rod 24 will drive the pulling claw 32 rotating around the spindle 34. The lock arm 324 may be U-shaped, L-shaped or other shape. The lock arm 324 is rotated by the pulling arm 322, thus jacks up the lock mechanism 40 and drives the lock mechanism 40 rotating to retract.

[0023] The lock mechanism 40 includes a bolt 42, a restoring spring 44 disposed in the bolt 42 and a position pin 46 inserted in the bolt 42 and restoring spring 44, the position pin 46 fixes the bolt 42 in the bolt opening 12. In the illustrated embodiment, the bolt 42 is hook shaped for locking with a lock catch. In a preferred embodiment, the surface of the bolt 42 contacting the lock catch is cambered surface for decreasing resistance of unlocking the lock set. One end of the bolt 42 opposite to the free end defines a house 422 and a locating hole 424 interconnected with the house 422. The restoring spring 44 is arranged in the house 422 and the axis of the restoring spring 44 is aligned with that of the locating hole 424. The position pin 46 passes through the locating hole 424 and the restoring spring 44 to fix the whole lock mechanism 40 in the base 10. The bolt 42 rotates around the position pin 46 at the bolt opening 12, making the bolt 42 protruding out or retracting in the bolt opening 12. The lock mechanism 40 further includes a pulling pin 48. A pin hole 426 corresponding to the pulling pin 48 is defined on the lock mechanism 40 at one side of the locating hole 424 near the pulling mechanism 30. The lock arm 324 connects with the pulling pin 48, thus the rotating lock arm 324 drives the pulling pin 48, which drives the bolt

42 rotating to protrude out or retract.

[0024] The operating process is described below.

[0025] When the lockset is locked, as the Figs.3-5 show, the bolt 42 protrudes out from the bolt opening 12, the sliding plate 22 locates in the middle of the base 10. As the Figs.6~8 show, when the sliding plate 22 is pushed or pulled to the right side via the driving rod 24, the protrusion 222 on the plate 22 pokes the pulling arm 322, the pulling claw 32 rotates around the spindle 34, the lock arm 324 jacks up the pulling pin 48, as a result, the bolt 42 retracts in the base 10. As the Figs 9~11 show, when the lockset is locked, and the sliding plate 22 is pushed or pulled to the left side via the driving rod 24, the protrusion 222 on the plate 22 pokes the pulling arm 322, the pulling claw 32 rotates around the spindle 34, the lock arm 324 jacks up the pulling pin 48, as a result, the bolt 42 retracts in the base 10.

[0026] The above locksets may be applied to burglar locks with multiple lock points.

[0027] The above locksets can be locked or unlocked by poking the latch mechanism 20 to drive the lock mechanism 40 to lock or unlock, the structure is simple and transmission is reliable and is easy to install.

[0028] The way of unlocking the locksets includes pushing, pulling and double side movement, thus the operating direction is variable, so that the generality is fine, and the locks suit to be installed in various conditions. When the using condition is complicated, the above lockset is easier to install and maintain.

[0029] Although the present invention has been described with reference to the embodiments thereof and the best modes for carrying out the present invention, it is apparent to those skilled in the art that a variety of modifications and changes may be made without departing from the scope of the present invention, which is intended to be defined by the appended claims.

Claims

1. A lockset, comprising:

a base defining a bolt opening;
a latch mechanism movably connected to the base;
a pulling mechanism rotatably connected to the base; and
a lock mechanism arranged in the bolt opening, wherein the pulling mechanism is driven rotating by the latch mechanism, the lock mechanism is driven protruding out or retracting from the bolt opening, and the latch mechanism sliding along a direction perpendicular to the sliding direction of the lock mechanism.

2. The lockset of claim 1, wherein the base defines a groove to receive the latch mechanism.

3. The lockset of claims 1 or 2, wherein the latch mechanism comprises a sliding plate and a driving rod connected to the sliding plate; the sliding plate contact the bottom of the groove closely, and the driving rod is arranged along the sliding direction of the latch mechanism. 5
4. The lockset of claims 1 to 3, wherein the sliding plate defines a limiting hole to a bolt, and the sliding plate is fixed to the base by the bolt. 10
5. The lockset of claims 1 to 4, further comprising a protrusion disposed on the sliding plate and contacting the pulling mechanism. 15
6. The lockset of claims 1 to 5, further comprising a limiting protrusion disposed on a sidewall of the base, and the limiting protrusion pushes against the protrusion to limit the move path of the sliding plate. 20
7. The lockset of claims 1 to 6, wherein the pulling mechanism corresponding to the driving rod comprises a pulling claw and a spindle fixing the pulling claw in the base. 25
8. The lockset of claims 1 to 7, wherein the pulling claw comprises a pulling arm and a lock arm connected with the pulling arm, and the pulling arm is connected to the sliding plate, the lock arm is connected to the lock mechanism. 30
9. The lockset of claims 1 to 8, wherein the lock mechanism further comprises a pulling pin passing through a bolt and connected to the pulling mechanism. 35
10. The lockset of claims 1 to 9, wherein the lock mechanism comprises a bolt, a restoring spring arranged in the bolt and a position pin inserted in the bolt and the restoring spring, and the bolt is positioned in the bolt opening by the position pin. 40

45

50

55

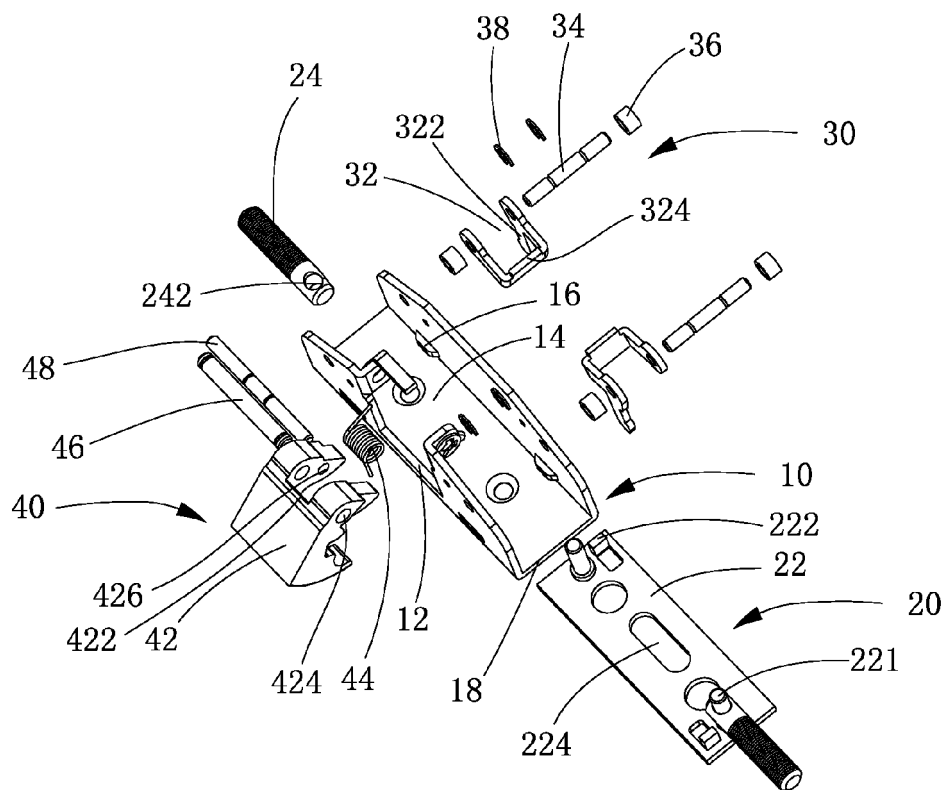


FIG. 1

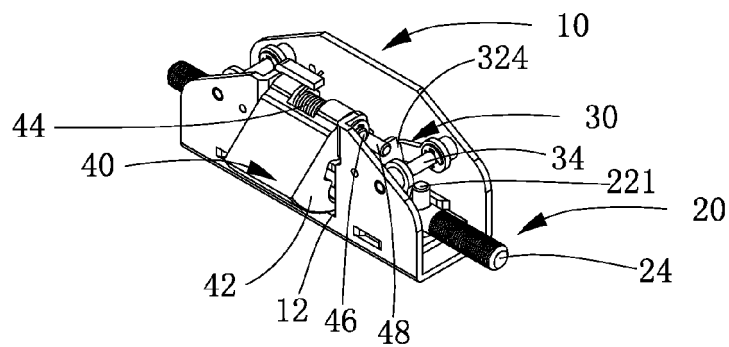


FIG. 2

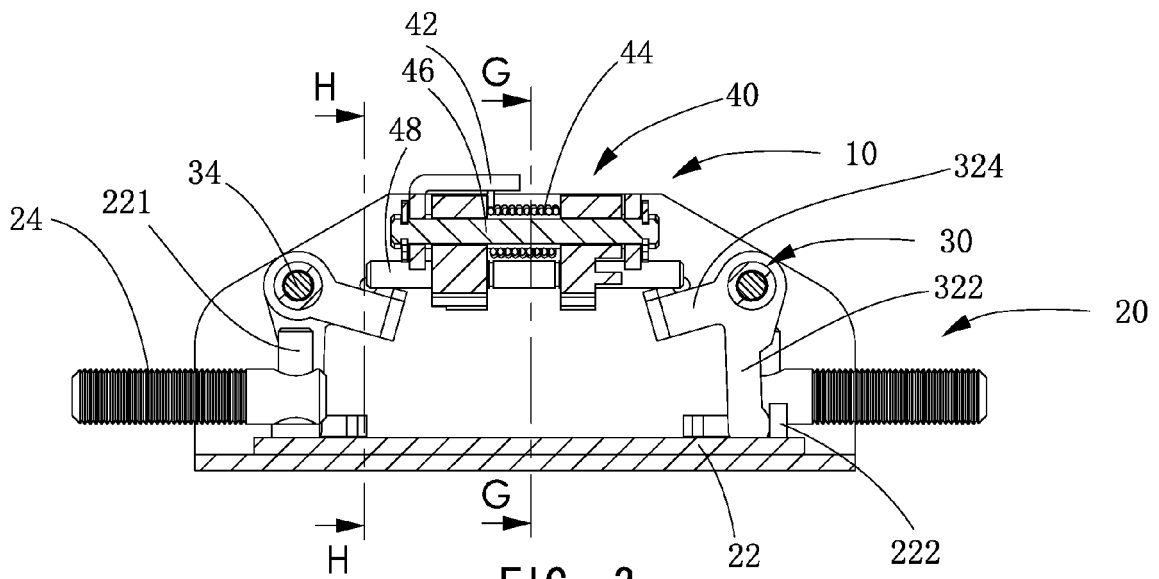


FIG. 3

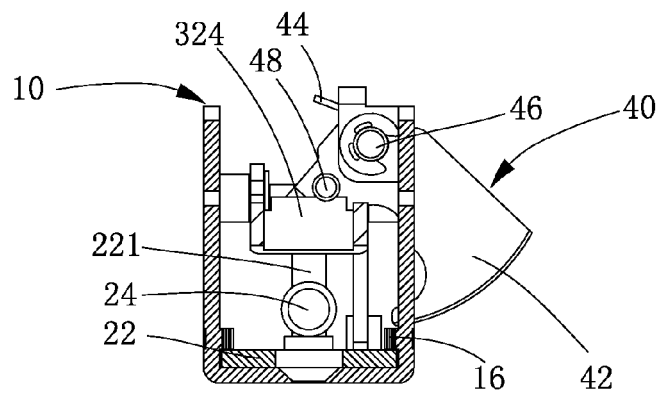


FIG. 4

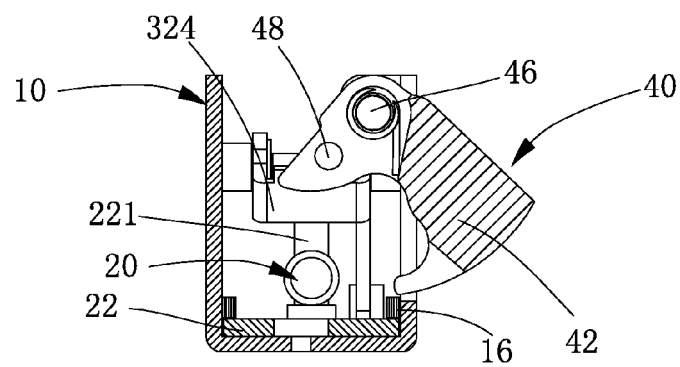


FIG. 5

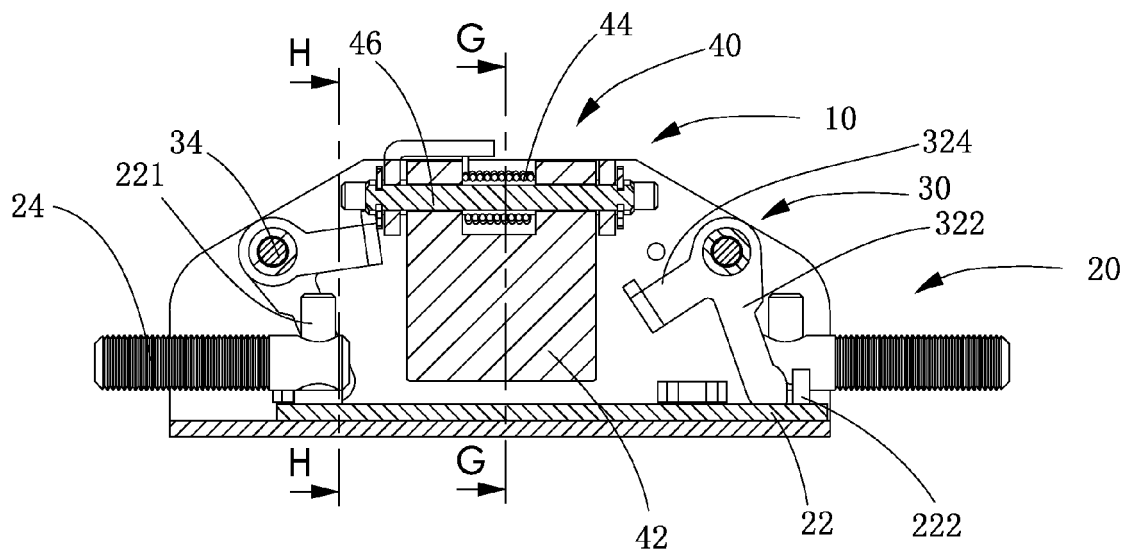


FIG. 6

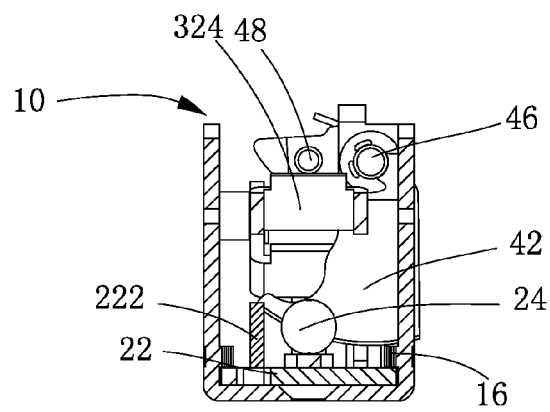


FIG. 7

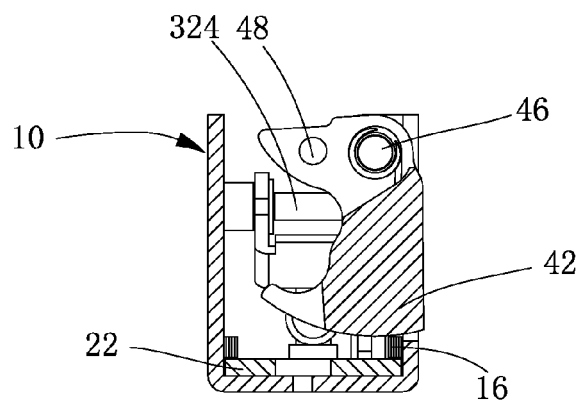


FIG. 8

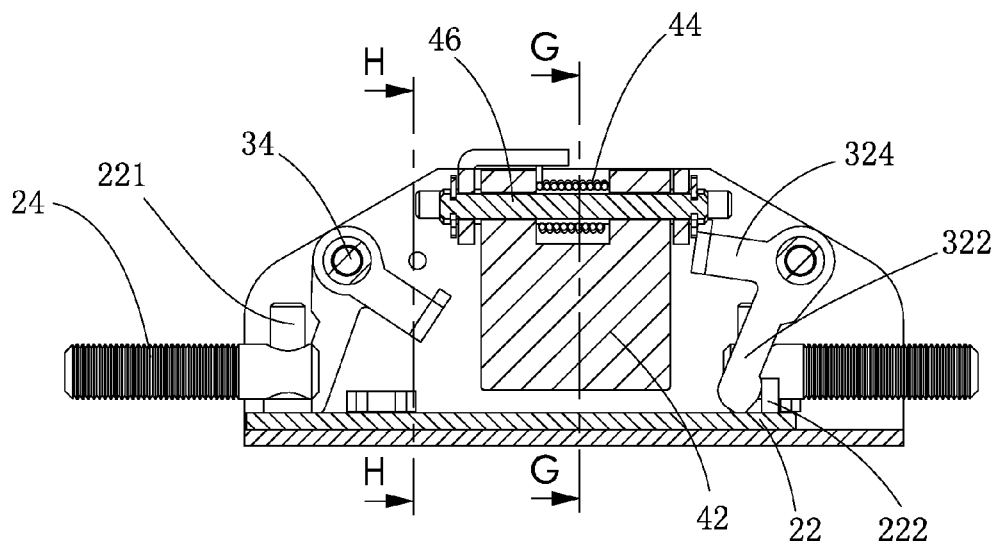


FIG. 9

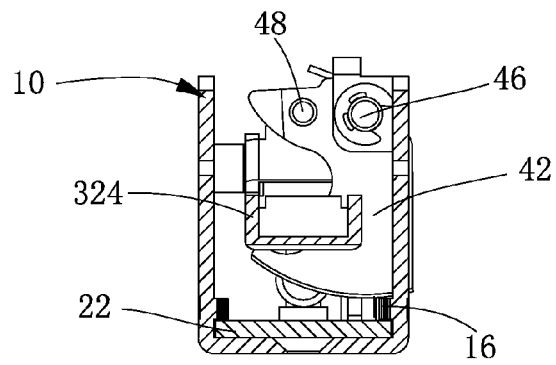


FIG. 10

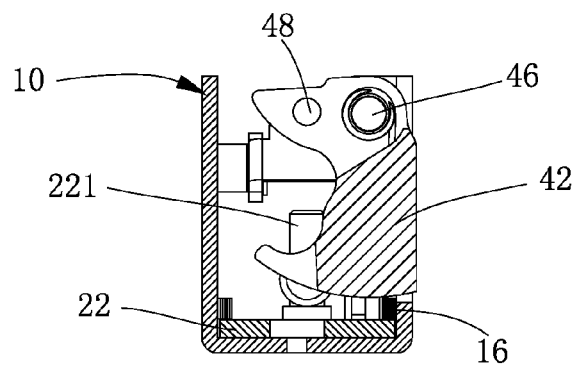


FIG. 11