surface of the cam 3. The mechanical control mechanism includes a mechanical actuating part and the half gear 2. The mechanical actuating part is meshed with the half gear 2. The cam 3 is driven by the engaging groove gear 4 and the half gear 2 separately and independently. The rotary plug 1 includes a rotary shaft and a plug body. The rotary shaft is arranged at one end of the plug body and is engaged in the cam 3. The plug body is a cylinder provided at a side thereof with a groove.

In the case of locking, the physical part at the groove of the plug body of the rotary plug 1 rotates into a moving passage of the rotary tongue 12. In the case of unlocking, the physical part at the groove of the plug body of the rotary plug 1 rotates out of the moving passage of the rotary tongue 12.

The rotary shaft sequentially passes through the half gear 2, the cam 3, and the engaging groove gear 4. The cross-section of the rotary plug 1 is circular or rectangular; and the cross-section at the groove of the rotary plug 1 is semicircular or rectangular.

The electronic actuating part 8 includes a gear motor and a motor actuated gear, the motor actuated gear being meshed with the engaging groove gear 4, and the gear motor being used to drive the motor actuated gear.

The cam 3 includes a boss 5 and fasteners 6, the fasteners 6 being arranged on the bottom surface of the cam 3 fit with the engaging groove gear 4, and the boss 5 being arranged on a side edge of the cam 3.

Fasteners 6 are arranged on the bottom surface of the engaging groove gear 4 fit with the cam 3, and the engaging groove gear 4 is fit with the cam 3 through the fasteners 6.

The half gear 2 includes a shifting block 21. The shifting block 21 is arranged on a bottom surface of the half gear 2 opposite to the cam 3. The shifting block 21 is fit with the boss 5. When the half gear 2 is actuated by the mechanical actuating mechanism to rotate, after the shifting block 21 rotates to the position of the boss 5, with the continuous rotation of the half gear 2, the shifting block 21 carries the boss 5 to rotate together, that is, the half gear 2 carries the cam 3 to rotate together.

The electronic-mechanical dual control lock further includes a lock case. The electronic control mechanism, the mechanical control mechanism, the rotary plug 1, and the rotary tongue 12 are all mounted in the lock case. The rotary tongue 12 has a

cross-section shape of a fan, and has a rotary shaft located at the circle center of the fan.

As shown in FIG. 4, an electronic-mechanical dual control lock of the present invention includes:

an electronic control mechanism, including an electronic actuating part 8, an engaging groove gear 4, and a cam 3, where the electronic actuating part 8 includes an electronic actuating gear, the electronic actuating gear is meshed with the engaging groove gear 4, a bottom surface of the engaging groove gear 4 is fit with a bottom surface of the cam 3, and the cam 3 is driven by the engaging groove gear 4;

a mechanical control mechanism, including mechanical code shifting pieces 7, a pulling claw 11, a fan-shaped gear 10, a transmission gear 9, and a half gear 2, where one end of the pulling claw 11 is arranged on the periphery of the mechanical code shifting pieces 7, a claw groove 71 is provided on the periphery of the mechanical code shifting pieces 7, and the other end of the pulling claw 11 is rotatably mounted on an end of the fan-shaped gear 10 near gear teeth, the transmission gear 9 is separately meshed with the fan-shaped gear 10 and the half gear 2, and a rotary shaft is arranged on an end of the fan-shaped gear 10 far away from the gear teeth; the transmission gear 9 is separately meshed with the fan-shaped gear 10 and the half gear 2, and the cam 3 is driven by the half gear 2; a rotary plug 1, including a rotary shaft and a plug body, where the rotary shaft is arranged at one end of the plug body and is engaged in the cam 3, and the plug body is a cylinder provided at a side thereof with a groove; a lock case, where the mechanical code shifting pieces 7 and the end of the fan-shaped gear 10 far away from the gear teeth are separately rotatably mounted on the lock case; a rotary tongue 12, rotatably mounted on the lock case, where the groove of the plug body of the rotary plug 1 is rotatable into or out of the moving trajectory of the rotary tongue 12.

As shown in FIG. 5, when the electronic-mechanical dual control lock of the present invention/utility model is to be opened in an electronic mode, the electronic actuating part 8 drives the electronic actuating gear to rotate, to carry the engaging groove gear 4 to rotate. During the rotation of the engaging groove gear 4, the fasteners on the lower end surface of the engaging groove gear 4 press against the fasteners on the upper end surface of the cam, so the engaging groove gear 4 carries the cam 3 to rotate together, and meanwhile the cam 3 carries the rotary plug 1 to

CLAIMS

1. An electronic-mechanical dual control lock, comprising an electronic control mechanism, a mechanical control mechanism, a half gear, a cam, a rotary plug, and a rotary tongue, wherein

the electronic control mechanism comprises an electronic actuating part and an engaging groove gear, the electronic actuating part being meshed with the engaging groove gear, and a bottom surface of the engaging groove gear being fit with a bottom surface of the cam;

the mechanical control mechanism comprises a mechanical actuating part and the half gear, the mechanical actuating part being meshed with the half gear, and the cam is driven by the engaging groove gear and the half gear separately and independently;

the rotary plug comprises a rotary shaft and a plug body, the rotary shaft being arranged at one end of the plug body and being engaged in the cam, and the plug body being a cylinder provided at a side thereof with a groove; and

in the case of locking, a physical part at the groove of the plug body of the rotary plug rotates into a moving passage of the rotary tongue; and in the case of unlocking, the physical part at the groove of the plug body of the rotary plug rotates out of the moving passage of the rotary tongue.

2. The electronic-mechanical dual control lock according to claim 1, wherein the rotary shaft sequentially passes through the half gear, the cam, and the engaging groove gear.

3. The electronic-mechanical dual control lock according to claim 2, wherein the electronic actuating part comprises a gear motor and a motor actuated gear, the motor actuated gear being meshed with the engaging groove gear, and the gear motor being used to drive the motor actuated gear.

4. The electronic-mechanical dual control lock according to claim 3, wherein a cross-section at a non-groove part of the rotary plug is circular or rectangular; and the cross-section at the groove of the rotary plug is semicircular or rectangular.

5. The automatic locking mechanism for a lockset according to claim 3, wherein the cam comprises a boss and fasteners, the fasteners being arranged on the bottom surface of the cam fit with the engaging groove gear, and the boss being arranged on a side edge of the cam.

6. The automatic locking mechanism for a lockset according to claim 5, wherein fasteners are arranged on the bottom surface of the engaging groove gear fit with the cam, and the engaging groove gear is fit with the cam through the fasteners.

7. The automatic locking mechanism for a lockset according to claim 5, wherein the half gear comprises a shifting block, the shifting block being arranged on a bottom surface of the half gear opposite to the cam, and the shifting block being fit with the boss.

8. The automatic locking mechanism for a lockset according to claim 1, further comprising a lock case, wherein the electronic control mechanism, the mechanical control mechanism, the rotary plug, and the rotary tongue are all mounted in the lock case.

9. The automatic locking mechanism for a lockset according to claim 7, wherein the rotary tongue has a cross-section shape of a fan and has a rotary shaft located at a circle center of the fan.

10. An electronic-mechanical dual control lock, comprising an electronic control mechanism, a mechanical control mechanism, a half gear, a cam, a rotary plug, and a rotary tongue, wherein:

the electronic control mechanism comprises an electronic actuating part and an engaging groove gear, the electronic actuating part being meshed with the engaging groove gear; the mechanical control mechanism comprises a mechanical actuating part and the half gear, the mechanical actuating part being meshed with the half gear; the cam is driven by the engaging groove gear and the half gear separately and independently;

the rotary plug comprises a rotary shaft and a plug body, the rotary shaft being arranged at one end of the plug body, sequentially passing through the half gear, the cam, and the engaging groove gear, and being engaged in the cam, and the plug body being a cylinder provided at a side thereof with a groove; the groove of the plug body of the rotary plug is rotatable into or out of a motion trajectory of the rotary tongue.

11. The automatic locking mechanism for a lockset according to claim 6, wherein the half gear comprises a shifting block, the shifting block being arranged on a bottom surface of the half gear opposite to the cam, and the shifting block being fit with the boss.

12. The automatic locking mechanism for a lockset according to claim 2, further comprising a lock case, wherein the electronic control mechanism, the mechanical control mechanism, the rotary plug, and the rotary tongue are all mounted in the lock case.

13. The automatic locking mechanism for a lockset according to claim 3, further comprising a lock case, wherein the electronic control mechanism, the mechanical control mechanism, the rotary plug, and the rotary tongue are all mounted in the lock case.

14. The automatic locking mechanism for a lockset according to claim 4, further comprising a lock case, wherein the electronic control mechanism, the mechanical control mechanism, the rotary plug, and the rotary tongue are all mounted in the lock case.

15. The automatic locking mechanism for a lockset according to claim 5, further comprising a lock case, wherein the electronic control mechanism, the mechanical control mechanism, the rotary plug, and the rotary tongue are all mounted in the lock case.

16. The automatic locking mechanism for a lockset according to claim 6, further comprising a lock case, wherein the electronic control mechanism, the mechanical control mechanism, the rotary plug, and the rotary tongue are all mounted in the lock case.