WHAT IS CLAIMED IS:

1. A clutch mechanism, comprising:

a slidable block (14), accommodated in a radial spacing between a first end shaft (1) and a second end shaft that are coaxially arranged and radially spaced apart from each other, and configured to translate along an axial direction of the first end shaft (1) and the second end shaft to realize decoupling or coupling between the first end shaft (1) and the second end shaft; and

a driving component, configured to drive the slidable block (14) to translate along the axial direction of the first end shaft (1) and the second end shaft,

wherein one of the first end shaft and the second end shaft is a hollow structure; a part of the other of the first end shaft and the second end shaft in the axial direction extends into the hollow structure; and an outer circumferential surface of the part is radially spaced apart from an inner circumferential surface of the hollow structure to accommodate the slidable block (14); and

wherein the part of the other of the first end shaft and the second end shaft in the axial direction has a first axial section (54) and a second axial section (55); a radial spacing between an outer circumferential surface of the first axial section (54) and the inner circumferential surface of the hollow structure is less than a radial spacing between an outer circumferential surface of the second axial section (55) and the inner circumferential surface of the hollow structure; and at a coupling position, an outer sidewall of the slidable block (14) is engaged with the inner circumferential surface of the hollow structure and an inner sidewall of the slidable block (14) is engaged with the outer circumferential surface of the first axial section (54).

2. The clutch mechanism according to claim 1, wherein the slidable block (14) is normally splined with the hollow structure, and is splined with the first axial section (54) at the coupling position.

3. The clutch mechanism according to claim 1 or 2, wherein the slidable block (14) is a sleeve; and the sleeve is arranged coaxially with the first end shaft (1) and the second end shaft.

4. The clutch mechanism according to any of claims 1 to 3, wherein the driving component is located on an outer side of the hollow structure; and an opening is formed on a sidewall of the hollow structure to cause the driving component to be connected with the slidable block (14).

5. The clutch mechanism according to claim 4, wherein a bearing (12) is coaxially disposed on the outer side of the hollow structure; the slidable block (14) is fixedly connected with an inner rim of the bearing (12); and an outer rim of the bearing (12) is connected with the driving component.

6. The clutch mechanism according to claim 5, wherein a mounting member is formed on the outer sidewall of the slidable block (14); the mounting member extends out of the hollow structure through the opening on the sidewall of the hollow structure to be connected with the driving component; and a limiting structure respectively abutting against two end surfaces of the inner rim of the bearing (12) is disposed on the mounting member.

7. The clutch mechanism according to claim 5, wherein the bearing (12) is mounted in a bearing mounting ring (13); a connecting portion configured to be connected with the driving component is formed on an outer circumferential surface of the bearing mounting ring (13); and a radial step configured to abut against a lower end surface of the outer rim of the bearing (12) is formed on an inner circumferential surface of the bearing mounting ring (13) along a circumferential direction.

8. The clutch mechanism according to any of claims 1 to 7, wherein the driving component is an electric driving component; and

the electric driving component comprises:

a power element, configured to provide a driving force;

a screw rod (33), connected with an output shaft of the power element for synchronous rotation; and

a helical transmission mechanism (34), threadedly connected with the screw rod (33), connected with the slidable block (14), and configured to convert rotation of the screw rod (33) to axial translation of the slidable block (14).

9. The clutch mechanism according to claim 8, further comprising a clutch mechanism housing (41), wherein the hollow structure is axially rotatably mounted in the clutch mechanism housing (41); and the driving component is mounted to an outer side of the clutch mechanism housing (41) and fixed to the clutch mechanism housing (41).

10. The clutch mechanism according to claim 9, wherein a plurality of arcuate plates spaced apart from each other along a circumferential direction are formed on a lower portion of the hollow structure, and the part of the other of first end shaft and the second end shaft in the axial direction extends into a circular space defined by the plurality of arcuate plates; the clutch mechanism further comprises a base (61); arcuate holes corresponding to structures of the arcuate plates are formed on the base (61); bottom ends of the plurality of arcuate plates are inserted into the base (61) through the arcuate holes and are fixed to the base (61); a first bearing (62) is coaxially

mounted in a radial spacing between the base (61) and the clutch mechanism housing (41); and a second bearing (4) is coaxially mounted in a radial spacing between an upper portion of the hollow structure and the clutch mechanism housing (41).

11. The clutch mechanism according to claim 9 or 10, wherein connecting portions radially protruding outward are disposed at opposite positions on two axial sides of the clutch mechanism housing (41); a power element housing of the power element is fixedly mounted to the connecting portion on one of the axial sides of the clutch mechanism housing (41); and the screw rod (33) is axially rotatably mounted to the connecting portion on the other of the axial sides of the clutch mechanism housing (41).

12. The clutch mechanism according to any of claims 9 to 11, wherein an adapter (42) configured to fix the clutch mechanism housing (41) to a vehicle body is further disposed on the clutch mechanism housing (41).

13. A steering system, comprising a first end shaft (1), a second end shaft, and a clutch mechanism (100) configured to realize decoupling or coupling between the first end shaft (1) and the second end shaft, wherein the clutch mechanism (100) is the clutch mechanism according to any of claims 1 to 12.

14. The steering system according to claim 13, further comprising a torque feedback mechanism, wherein the torque feedback mechanism is configured to apply a reverse feedback torque to the first end shaft (1) according to a torsional torque of the first end shaft (1) in a decoupled state, to

enhance an operation feeling of a steering wheel that is connected with the first end shaft (1) in a transmission way.

15. The steering system according to claim 14, wherein the torque feedback mechanism comprises:

a torque detection element, configured to detect the torsional torque of the first end shaft in the decoupled state;

a power element, configured to provide a driving force;

a transmission mechanism, configured to transmit the driving force to the first end shaft to apply the reverse feedback torque to the first end shaft; and

a controller, configured to control, according to the torsional torque detected by the torque detection element, the power element to provide the driving force.

16. The steering system according to any of claims 13 to 15, further comprising a reset mechanism, wherein the reset mechanism is configured to drive the first end shaft to be reset after completion of a game mode, to enable the clutch mechanism to couple the first end shaft and the second end shaft.

17. The steering system according to claim 16, wherein the reset mechanism comprises:

an angle detection element, configured to detect a steering angle of the first end shaft before the decoupling and a steering angle of the first end shaft after completion of the decoupling;

a power element, configured to provide a driving force;

a transmission mechanism, configured to transmit the driving force to the first end shaft to drive the first end shaft to be reset to the steering angle before the decoupling; and

a controller, configured to control, according to the steering angle detected by the angle detection element, the power element to provide the driving force.

18. The steering system according to claim 15 or 17, wherein the power element is a motor (23); the transmission mechanism comprises a first gear (21) connected with an output shaft of the motor (23) for synchronous rotation and a second gear (2) connected with the first end shaft (1) for synchronous rotation, the first gear (21) is meshed with the second gear (2); and an external diameter of the first gear (21) is less than an external diameter of the second gear (2).

19. The steering system according to claim 18, wherein the second gear (2) is coaxially fixed to the first end shaft (1); a retaining structure respectively abutting against two axial end surfaces of the second gear (2) is disposed on an outer sidewall of the first end shaft (1); a protrusion is formed on the outer sidewall of the first end shaft (1); a notch is formed on an edge portion of an inner rim of the second gear (2) corresponding to the protrusion, and the protrusion is accommodated in the notch.

20. The steering system according to any of claims 13 to 19, wherein a limiting mechanism configured to limit a range of steering angle of the first end shaft in the decoupled state is further disposed in the steering system.

21. The steering system according to claim 20, wherein the first end shaft (1) is a hollow structure; a part of the second end shaft in an axial direction extends into the hollow structure; the limiting mechanism comprises a limiting nut (6) threadedly connected with an end (56) of the second end

shaft located in the hollow structure; external splines mated with splines on an inner circumferential surface of the hollow structure are formed on an outer circumferential surface of the limiting nut (6); and a limiting portion configured to limit displacements of two axial sides of the limiting nut (6) is further disposed on the inner circumferential surface of the hollow structure and/or an outer circumferential surface of the second end shaft.

22. The steering system according to claim 21, wherein the second end shaft comprises a steering sleeve (53) and a steering shaft (70) that are disposed coaxially; the steering shaft (70) extends into the steering sleeve (53) and is connected with the steering sleeve (53) for synchronous rotation; the steering sleeve (53) is located in the hollow structure; and external threads configured to be threadedly connected with the limiting nut (6) and external splines configured to be splined with the slidable block to couple the first end shaft to the second end shaft are machined on an outer circumferential surface of the steering sleeve (53).

23. The steering system according to any of claims 13 to 22, wherein the first end shaft is a steering wheel end shaft, and the second end shaft is a steering device end shaft.

24. An automobile, comprising the steering system according to any of claims 13 to 23.