Claims

What is claimed is:

1. A magnetic buckle assembly comprising:

at least one first buckle component;

a second buckle component for mating with the at least one first buckle component;

a switch movably disposed on the second buckle component;

an operating component linked to the switch;

at least one first magnetic component disposed on the at least one first buckle component;

a second magnetic component disposed on the switch and for magnetically attracting or repelling the at least one first magnetic component; and

at least one latch movably disposed on the second buckle component and for engaging with the at least one first buckle component, the at least one latch moving along with movement of the operating component or movement of the switch;

wherein the operating component drives the switch to move to change a direction of a magnetic force of the second magnetic component acting on the at least one first magnetic component when the operating component is operated to disengage the at least one latch from the at least one first buckle component.

2. The magnetic buckle assembly of claim 1, wherein the at least one first magnetic component magnetically attracts the second magnetic component during a mating process of the at least one first buckle component and the second buckle component.

3. The magnetic buckle assembly of claim 1, wherein the switch is rotatably disposed on the second buckle component around a rotating axis, and the rotating axis is arranged along a front-rear direction or a lateral direction of the magnetic buckle assembly.

4. The magnetic buckle assembly of claim 1, wherein the switch is rotatably disposed on the second buckle component around a rotating axis, and the operating component is movably connected or fixedly connected to the switch.

5. The magnetic buckle assembly of claim 4, wherein the operating component is slidably disposed on the second buckle component, and the switch rotates around the rotating axis along with sliding movement of the operating component.

6. The magnetic buckle assembly of claim 5, wherein a sliding direction of the operating component intersects with an arranging direction of the rotating axis.

7. The magnetic buckle assembly of claim 4, wherein the operating component is slidably disposed on a front wall or a lateral wall of the second buckle component.

8. The magnetic buckle assembly of claim 4, wherein a driving structure is formed on the operating component, a driven structure is formed on the switch, and the operating component drives the switch to rotate around the rotating axis.

9. The magnetic buckle assembly of claim 8, wherein the driving structure is a gear rack structure arranged along a sliding direction of the operating component, and the driven structure is a gear wheel structure for rotatably engaging with the gear rack structure.

10. The magnetic buckle assembly of claim 9, wherein the rotating axis coincides with a central axis of the gear wheel structure, and the gear wheel structure is located at an end portion of the switch.

11. The magnetic buckle assembly of claim 8, wherein one of the driving structure and the driven structure is a slot structure, and another one of the driving structure and the driven structure is a column structure slidably disposed inside the slot structure and offset from the rotating axis.

12. The magnetic buckle assembly of claim 11, wherein the column structure is located at an end surface of the switch, and a longitudinal direction of the slot structure intersects with a sliding direction of the operating component.

13. The magnetic buckle assembly of claim 4, wherein a connecting chamber is formed on the operating component and comprises a connecting opening facing toward the switch, an end portion of the switch covers the connecting opening, and the second magnetic component is partially located inside the connecting chamber.

14. The magnetic buckle assembly of claim 13, further comprising a connecting component connected to the operating component and the switch along the rotating axis.

15.The magnetic buckle assembly of claim 13, wherein an accommodating chamber is formed on the end portion of the switch, the accommodating chamber comprises an accommodating opening facing toward the connecting chamber and communicated with the connecting chamber, and the connecting chamber and the accommodating chamber cooperatively accommodate the second magnetic component.

16. The magnetic buckle assembly of claim 4, further comprising a first resilient component disposed between the operating component and the second buckle component for driving the operating component to recover.

17. The magnetic buckle assembly of claim 16, wherein a guiding portion is formed on the operating component for resiliently deforming the first resilient component, and the first resilient component is sheathed on the guiding portion.

18. The magnetic buckle assembly of claim 4, further comprising a first resilient component disposed between the switch and the second buckle component for driving the switch and the operating component to recover.

19. The magnetic buckle assembly of claim 1, wherein a hollow structure is formed on the switch, and the second magnetic component is embedded into the hollow structure.

20.The magnetic buckle assembly of claim 19, wherein an embedding chamber is formed on the at least one first buckle component, the at least one first magnetic component is embedded into the embedding chamber, and the embedding chamber is aligned with the hollow structure along a mating direction of the at least one first buckle component and the second buckle component.

21. The magnetic buckle assembly of claim 1, wherein the operating component drives the at least one latch to disengage from the at least one first buckle component directly or by the switch indirectly.

22. The magnetic buckle assembly of claim 21, wherein a locking structure is formed on the at least one latch, and a locked structure is formed on the at least one first buckle component and for cooperating with the locking structure.

23. The magnetic buckle assembly of claim 22, wherein a driven cooperating structure is formed on the at least one latch, at least one driving cooperating structure is formed on the switch or the operating component, the at least one latch is slidably disposed on the second buckle component, the one of the switch and the operating component drives the at least one latch to slide by cooperation of the at least one driving cooperating structure and the driven cooperating structure to disengage the locking structure from the locked structure.

24. The magnetic buckle assembly of claim 23, wherein the at least one driving cooperating structure is a first inclined surface structure formed on the operating component and inclined relative to a sliding direction of the at least one latch, and the driven cooperating structure is a second inclined surface structure.

25. The magnetic buckle assembly of claim 23, wherein the switch is rotatably disposed on the second buckle component around a rotating axis, the at least one driving cooperating structure is a first helical surface structure formed on the switch, a central axis of the first helical surface structure coincides with the rotating axis, and the driven cooperating structure is a second helical surface structure.

26. The magnetic buckle assembly of claim 23, wherein one of the at least one driving cooperating structure and the driven cooperating structure is a first helical surface structure, and another one of the at

least one driving cooperating structure and the driven cooperating structure is a protrusion slidable along the first helical surface structure.

27. The magnetic buckle assembly of claim 23, wherein the at least one driving cooperating structure is formed on an end portion of the switch facing toward the at least one latch.

28. The magnetic buckle assembly of claim 22, further comprising at least one second resilient component disposed between the at least one latch and the second buckle component for driving the at least one latch to recover to bias the locking structure to engage with the locked structure.

29. The magnetic buckle assembly of claim 28, wherein a guiding structure is formed on the at least one latch for resiliently deforming the at least one second resilient component, and the at least one second resilient component is sheathed on the guiding structure.

30. The magnetic buckle assembly of claim 1, wherein the at least one first buckle component comprises at least two first buckle components, the at least one first magnetic component comprises at least two first magnetic components respectively disposed on the at least two first buckle components, and the at least two first buckle components are arranged symmetrically.

31. The magnetic buckle assembly of claim 30, wherein the at least two first magnetic components are arranged symmetrically.

32. The magnetic buckle assembly of claim 1, wherein the at least one first buckle component comprises a shoulder strap buckle and a waist strap buckle detachably installed on or integrated with the shoulder strap buckle, and the second buckle component is a crotch strap buckle.

33. The magnetic buckle assembly of claim 32, wherein the shoulder strap buckle is stacked above the waist strap buckle along a front-rear direction of the magnetic buckle assembly.

34. The magnetic buckle assembly of claim 33, wherein the shoulder strap buckle is aligned with the waist strap buckle along a lateral direction of the magnetic buckle assembly.

35. The magnetic buckle assembly of claim 32, wherein an engaging portion is formed on the waist strap buckle, an engaging arm protrudes from the shoulder strap buckle for engaging with the engaging portion, and an outline of the engaging arm matches with an outline of the engaging portion.

36. The magnetic buckle assembly of claim 32, further comprising at least one third magnetic component magnetically attracting the at least one first magnetic component, the at least one first magnetic component being embedded into one of the shoulder strap buckle and the waist strap buckle, and the at least one third magnetic component being embedded into another one of the shoulder strap buckle and the waist strap buckle.

37. The magnetic buckle assembly of claim 36, wherein the at least one first magnetic component is aligned with the at least one third magnetic component along a front-rear direction or a lateral direction of the magnetic buckle assembly.

38. The magnetic buckle assembly of claim 32, further comprising a magnetic conductive component magnetically attracting the at least one first magnetic component, the at least one first magnetic component being embedded into one of the shoulder strap buckle and the waist strap buckle, and the magnetic conductive component being embedded into another one of the shoulder strap buckle and the waist strap buckle.

39. The magnetic buckle assembly of claim 38, wherein the magnetic conductive component is made of magnetic conductive materials.

40. The magnetic buckle assembly of claim 32, wherein the at least one first magnetic component is embedded into the waist strap buckle, and the shoulder strap buckle is slidably detachably installed on the waist strap buckle.

41. The magnetic buckle assembly of claim 1, wherein the at least one first buckle component is one of a male buckle and a female buckle, and the second buckle component is another one of the male buckle and the female buckle.

42. The magnetic buckle assembly of claim 1, wherein the switch is rotatably disposed on the second buckle component around a rotating axis, the magnetic force of the second magnetic component acting on the at least one first magnetic component is changed from a magnetic attracting force to a magnetic repelling force or from the magnetic repelling force to the magnetic attracting force when the switch is rotated over a predetermined angle.

43. The magnetic buckle assembly of claim 42, wherein the predetermined angle is 45 or 90 degrees.