Claims:

1. A vehicle body collision energy absorbing structure, comprising:

a front-end collision energy absorbing structure mounted at a front end of a head carriage, and a middle-end collision energy absorbing structure mounted at an end of a middle carriage,

wherein the front-end collision energy absorbing structure includes a hermetic partition wall connected to both a cab skeleton and a skin, a front-end coupler arranged below the hermetic partition wall along a center line of a vehicle body, front-end anti-climbers symmetrically distributed on both sides of the center line of the vehicle body and located below the hermetic partition wall, and a front-end energy absorbing module, wherein a side of the front-end energy absorbing module deviating towards the center line of the vehicle body is mounted on the hermetic partition wall; and

the middle-end collision energy absorbing structure includes a middle shearing coupler mounted below an underframe~~, middle energy absorbing modules mounted on both sides of an end wall of the middle carriage, and a middle anti-climber mounted at a position corresponding to a side beam and below the middle energy absorbing modules, wherein a length of each of the middle energy absorbing modules extends along a height direction of the end wall~~.

2. The vehicle body collision energy absorbing structure of claim 1, wherein the middle-end collision energy absorbing structure further includes middle energy absorbing modules mounted on both sides of an end wall of the middle carriage, and a middle anti-climber mounted at a position corresponding to a side beam and below the middle energy absorbing modules, wherein a length of each of the middle energy absorbing modules extends along a height direction of the end wall.

3. The vehicle body collision energy absorbing structure of claim 2, wherein the middle anti-climber is provided with a guide rod, and an axis of the guide rod deviates from a central line of the middle anti-climber.

4. The vehicle body collision energy absorbing structure of claim 1, wherein along

a direction of the center line of the vehicle body, a front end of the front-end coupler, a front end of the front-end anti-climber and a front end of the front-end energy absorbing module are staggered.

5. A vehicle body collision energy absorbing structure, comprising:

a front-end collision energy absorbing structure mounted at a front end of a head carriage, wherein the front-end collision energy absorbing structure includes a hermetic partition wall connected to both a cab skeleton and a skin, a front-end coupler arranged below the hermetic partition wall along a center line of a vehicle body, front-end anti-climbers symmetrically distributed on both sides of the center line of the vehicle body and located below the hermetic partition wall, and a front-end energy absorbing module, wherein a side of the front-end energy absorbing module deviating towards the center line of the vehicle body is mounted on the hermetic partition wall.

~~2~~6. The vehicle body collision energy absorbing structure of claim ~~1~~5, wherein along a direction of the center line of the vehicle body, a front end of the front-end coupler, a front end of the front-end anti-climber and a front end of the front-end energy absorbing module are staggered; the cab skeleton and the hermetic partition wall are mounted on the underframe; and in a vertical height direction of the vehicle body, the front-end energy absorbing module is symmetrically mounted with an upper surface of the underframe as a center line or has a given offset relative to the upper surface of the underframe.

~~3~~7. The vehicle body collision energy absorbing structure of claim ~~2~~6, wherein the front-end energy absorbing module includes a housing, a back plate and an energy absorbing inner core mounted in the housing and abutted against the back plate, wherein the front-end energy absorbing module is mounted on the hermetic partition wall through the back plate.

~~4~~8. The vehicle body collision energy absorbing structure of claim ~~3~~7, wherein the offset of the front-end energy absorbing module relative to the upper surface of the

underframe is less than or equal to 20% of a height of the back plate, and the back plate is connected to the hermetic partition wall by bolts.

~~5~~9. The vehicle body collision energy absorbing structure of claim ~~3~~7, wherein a circumference of the housing has a taper angle, and the taper angle gradually decreases from a side of the back plate to a front end of the housing, and the taper angle is smaller or equal to 5 degrees.

~~6~~10. The vehicle body collision energy absorbing structure of claim ~~3~~7, wherein the energy absorbing inner core is a honeycomb core, and an axis direction of the honeycomb core is parallel or orthogonal to a travelling direction of the vehicle body.

~~7~~11. The vehicle body collision energy absorbing structure of any one of claims ~~1~~ 5 to ~~6~~10, wherein a mounting end of the front-end coupler, a mounting end of the front-end anti-climber and a mounting end of the front-end energy absorbing module are not in the same mounting plane.

12. The vehicle body collision energy absorbing structure of any one of claims 5 to 10, wherein a front end of the head carriage is provided with a stop beam, a front end of a traction beam on the underframe extends to be connected to the stop beam, a lower part of the stop beam is provided with reinforcing ribs of the front-end energy absorbing module, and no front-end floor is provided on a front end of the stop beam.

13. A vehicle body collision energy absorbing structure, comprising:

a front-end collision energy absorbing structure mounted at a front end of a head carriage, and a middle-end collision energy absorbing structure mounted at an end of a middle carriage,

wherein the front-end collision energy absorbing structure includes a hermetic partition wall connected to both a cab skeleton and a skin, a front-end coupler arranged below the hermetic partition wall along a center line of a vehicle body, front-end anti-climbers symmetrically distributed on both sides of the center line of the vehicle body and located below the hermetic partition wall; and

the middle-end collision energy absorbing structure includes a middle shearing

coupler mounted below an underframe, middle energy absorbing modules mounted on both sides of an end wall of the middle carriage, and a middle anti-climber mounted at a position corresponding to a side beam and below the middle energy absorbing modules, wherein a length of each of the middle energy absorbing modules extends along a height direction of the end wall.

~~8~~14. The vehicle body collision energy absorbing structure of ~~any one of~~ claim~~s~~ 13 ~~to 6~~, wherein the middle energy absorbing modules are mounted on the end wall of the middle carriage and are located on both sides outside a through passage, and each of the middle energy absorbing modules includes an aluminum honeycomb and an aluminum plate coated outside the aluminum honeycomb; and

an inner or inner side of the middle energy absorbing module is provided with a drainage tube.

~~9~~15. The vehicle body collision energy absorbing structure of ~~any one of~~ claim~~s~~ 13 ~~to 6~~, wherein the middle anti-climber is provided with a guide rod, and an axis of the guide rod deviates from a center line of the middle anti-climber.

~~10. The vehicle body collision energy absorbing structure of any one of claims 1 to 6, wherein a front end of the head carriage is provided with a stop beam, a front end of a traction beam on the underframe extends to be connected to the stop beam, a lower part of the stop beam is provided with reinforcing ribs of the front-end energy absorbing module, and no front-end floor is provided on a front end of the stop beam.~~

~~11~~16. A rail vehicle, comprising a vehicle body and the vehicle body collision energy absorbing structure of any one of claims 1 to 4, any one of claims 5 to 12, any one of claims 13 to 15 ~~any one of claims 1 to 10 mounted at a head end of the vehicle body,~~

~~wherein in case that two rail vehicles travelling in opposite directions, the front-end energy absorbing module of each of the two rail vehicles is located on the same side towards a driving direction of the rail vehicle~~.