CLAIMS

1. A conveyor line limit stopping device, comprising a high-bay racking (1), a conveying mechanism (2), a shuttle (3), and interlaced travel tracks (4), wherein the high-bay racking (1) and the conveying mechanism (2) are located above the travel tracks (4) and are in no contact with each other; the shuttle (3) moves and travels on the travel tracks (4) and shuttles below the high-bay racking (1) and the conveying mechanism (2); a limit stopping device (5) is arranged at one end of the conveying mechanism (2) close to the high-bay racking (1); when a pallet (9) that carries goods is placed on a conveying surface (17), if the conveying mechanism (2) performs forward conveying for inbound, the limit stopping device (5) is in limit contact with the pallet (9) that carries goods, and if a conveyor belt (8) performs backward conveying for outbound, the pallet (9) presses the limit stopping device (5) down to be below the conveying surface (17).

the limit stopping device (5) comprises a limit plate (10) and a rotating pin (11); a rotating hole is formed in a middle portion of the limit plate (10); the rotating pin (11) is fixed on a side surface of a conveyor frame (7) through the rotating hole; the limit plate (10) is able to rotate around the rotating pin (11) relative to the conveyor frame (7);

a swing adjustment slot (14) is formed in a lower portion of the limit plate (10); a swing limit pin (12) is arranged in the swing adjustment slot (14); the swing limit pin (12) is fixed on the side surface of the conveyor frame (7) through the swing adjustment slot (14); when the limit plate (10) rotates around the rotating pin (11) relative to the conveyor frame (7), the swing limit pin (12) slides within the swing adjustment slot (14) and limits a rotation angle of the limit plate (10);

photoelectric detection devices (16) are mounted at two ends of the conveyor frame (7) in a length direction; the two photoelectric detection devices (16) are electrically connected to the conveyor belt (8); the two photoelectric detection devices (16) jointly control conveying and stopping of the conveyor belt (8); each of the two photoelectric detection devices (16) comprises a laser emitting device and a laser receiving device; the two laser emitting devices are mounted on one conveyor frame (7), and the two laser receiving devices are mounted on another conveyor frame (7); the two laser emitting devices and the two laser receiving devices are mounted on sides, away from each other, of the two conveyor frames (7);

a vertical electromagnetic controller is hung on a support leg on one side of the pallet (9) close to the limit stopping device (5); an electromagnet that is remotely controlled is mounted on the electromagnetic controller; a magnet is mounted at a lower portion of the limit plate (10); when the electromagnetic controller is hung on the support leg on the side of the pallet (9) close to the limit stopping device (5), the electromagnet on the electromagnetic controller is located below the

conveying surface (17) of the conveyor belt (8), and directly faces the magnet at the lower portion of the limit plate (10); a repulsive force exists between the electromagnet on the electromagnetic controller and the magnet at the lower portion of the limit plate (10); when a pallet (9) that carries fragile products is erected on conveying surfaces (17) of two groups of conveyor belts (8), the electromagnet on the electromagnetic controller is remotely turned on, and then the pallet (9) that carries fragile products moves towards the limit stopping device (5) under conveying of the two groups of conveyor belts (8); in the process, the electromagnet on the electromagnetic controller and the magnet on the limit plate (10) repel each other such that the limit plate (10) rotates around the rotating pin (11) in a direction in which a limit portion (15) approaches a center of the conveyor frame (7), until the limit plate (10) descends below the conveying surface (17) under action of the support leg of the pallet (9) that carries goods; two sides, in the length direction of the conveyor frame (7), of the goods carried on the pallet (9) block laser emitted by the laser emitting devices of the two photoelectric detection devices (16) arranged at the two ends of the conveyor frame (7); and the photoelectric detection devices control a driving mechanism arranged below the conveyor frame (7) to stop, making the conveyor belt (8) not perform conveying.

2. The conveyor line limit stopping device according to claim 1, wherein the conveying mechanism (2) comprises two groups of conveyor frames (7) that are erected on two sides of the travel tracks (4) in parallel; the two groups of conveyor frames (7) are provided in the length direction with conveyor belts (8) capable of performing forward and backward conveying; the limit stopping device (5) is arranged on an inner side of any group of conveyor frames (7); and an upper surface of the limit stopping device (5) protrudes from the conveying surfaces of the conveyor belts (8).

3. The conveyor line limit stopping device according to claim 1, wherein one side, close to the center of the conveyor frame (7), of an upper portion of the limit plate (10) obliquely upwards extends to form the limit portion (15); one side of the limit portion (15) close to the center of the conveyor frame (7) is a vertical limit surface (18); one side of the limit portion (15) away from the center of the conveyor frame (7) is a transitional slope (19); and in an initial state, the vertical limit surface (18) of the limit portion (15) is higher than the conveying surface (17) of the conveyor belt (8).

4. The conveyor line limit stopping device according to claim 3, wherein a hollow hole (13) is formed in the limit portion (15); and the hollow hole (13) is disposed on one side of the limit portion (15) away from the high-bay racking (1) relative to the rotating pin (11).

5. A handling method for goods pallet inbound and outbound processes for the conveyor line limit stopping device according to claim 3, wherein

a handling method for the inbound process is as follows:

step S1: a lift lifts and transports the pallet (9) that carries goods onto the conveying surfaces (17), away from the high-bay racking (1), of the conveyor belts (8) of the conveying mechanism (2);

step S2: the conveying mechanism (2) is turned on, and the conveyor belts (8) perform forward conveying, to cause the pallet that carries goods on the conveying surfaces (17) of the conveyor belts (8) to move towards the high-bay racking (1);

step S3: under the driving of the conveyor belts (8) on the pallet (9) that carries goods, when one side surface of a support leg on one side, close to the high-bay racking (1), of the pallet (9) that carries goods is in contact the vertical limit surface (18), the limit plate (10) rotates around the rotating pin (11) in a direction in which the limit portion (15) moves away from the centers of the conveyor frames (7), until the swing limit pin (12) is in pressing contact with an end of the swing adjustment slot (14) away from the centers of the conveyor frames (7); at the time, the vertical limit surface (18) is in limit contact with the pallet (9);

step S4: in the state of step S3, the two photoelectric detection devices (16) arranged at the two ends of the conveyor frames (7) control the driving mechanisms arranged below the conveyor frames (7) to stop, making the conveyor belts (8) not perform conveying;

step S5: in the state of step S4, the shuttle (3) is driven onto a travel track (4) located below the two conveyor belts (8) and is in limit contact with the limit plates, and at the time, a lifting plate of the shuttle (3) directly faces a lower surface of the pallet (9) that carries goods; and

step S6: in the state of S5, the lifting plate of the shuttle (3) rises up and jacks up the pallet (9) that carries goods, then transports the pallet (9) that carries goods along the travel track (4), and places the pallet (9) that carries goods into the high-bay racking (1), to complete the inbound process.

6. The handling method for goods pallet inbound and outbound processes for the conveyor line limit stopping device according to claim 5, wherein

a handling method for the outbound process is as follows:

step S7: the shuttle (3) transports the pallet (9) that carries goods onto the conveying surfaces (17) at ends, close to the high-bay racking (1), of the conveyor belts (8) of the conveying mechanism (2);

step S8: the conveying mechanism (2) is turned on, and the conveyor belts (8) perform

backward conveying, to cause the pallet that carries goods on the conveying surfaces (17) of the conveyor belts (8) to move away from the high-bay racking (1);

step S9: under the driving of the conveyor belts (8) on the pallet (9) that carries goods, when a contour of a lower end of the support leg on one side, away from the high-bay racking (1), of the pallet (9) that carries goods is in contact the transitional slope (19) on the limit plate (10), the contour of the lower end of the support leg at the lower end of the pallet (9) that carries goods presses the limit portion (15) of the limit stopping device (5) along the transitional slope (19); in the process, the limit plate (10) rotates around the rotating pin (11) in the direction in which the limit portion (15) moves towards the centers of the conveyor frames (7), until the limit plate (10) descends below the conveying surfaces (17) under the action of the support leg of the pallet (9) that carries goods; in the process, a contour of an upper end of the limit portion (15) is always in contact with the contour of the lower end of the pallet (9) that carries goods, and the limit plate (10) does not hinder the pallet (9) that carries goods from moving together with the two conveyor belts (8);

step S10: at the time, two sides, in the length direction of the conveyor frame (7), of the goods carried on the pallet (9) block laser emitted by the laser emitting devices of the two photoelectric detection devices (16) arranged at the two ends of the conveyor frame (7), so that the receiving devices of the two photoelectric detection devices (16) do not receive the laser emitted by the laser emitting devices; at the time, the photoelectric detection devices control the driving mechanisms arranged below the conveyor frames (7) to stop, making the conveyor belts (8) not perform conveying; at the time, a bottom of the pallet (9) that carries goods is located right above the lifting plate of the lift; and

step S11: afterwards, the lifting plate of the lift rises up and jacks up the pallet (9) that carries goods, and lifts the pallet (9) that carries goods to an outbound port, to complete the outbound process.