AMENDED CLAIMS

1. An automatic lift carrier, including a supporting frame (2) provided with a moving mechanism (1), a lifting rack (3) mounted on the supporting frame (2), a driving mechanism for driving the lifting rack (3) to move up or down, at least one bearing mechanism (5) arranged on the lifting rack (3), and a control system,

characterized in that the driving mechanism comprises two first motors (41) each having a frequency inverter, driving wheels (42) that are arranged at a right side and a left side of the supporting frame (2) respectively, and at least one cable assembly connecting the driving wheels (42) with the lifting rack (3), the driving wheels (42) each being connected for power transmission with an output end of a corresponding first motor (41) through a coupling (44), and the output end of each of the first motors (41) having a first encoder;

wherein for driving the lifting rack (3) to move up or down, the control system sends out two sets of identical pulse signals to input ends of two frequency inverters, which each have an output end connected with a corresponding first motor (41), and output signals of the first encoders are fed to respective frequency inverters as return signals, whereby the return signals are compared with input pulse signals by means of controllers in the frequency inverters, so that the input and output can be consistent with each other through adjustment; and

wherein the cable assembly includes first driven wheels (431) that are arranged on an upper portion of the supporting frame (2) at a right side and a left side thereof respectively, second driven wheels (432) that are arranged at a right side and a left side of the lifting rack (3), a steering wheel (433) arranged beside the first driven wheels (431), and a cable (434), wherein the cable (434) is connected at one end thereof to a side of the lifting rack (3), and then sequentially passes the first driven wheel (431), the second driven wheel (432), and the driving wheel (42) that are all arranged at the same side of the lifting rack (3), and finally extends outward after passing the steering wheel (433).

2. The automatic lift carrier according to claim 1, characterized in that the two driving wheels (42) are arranged in tandem on the upper portion of the supporting frame (2) at each of the right side and the left side thereof, and said two first motors (41) are respectively arranged at a front portion and a rear portion of the supporting frame (2), wherein each of the first motors (41) has a right and a left output ends, which are respectively connected for power transmission with a driving wheel (42) arranged at the right side of the supporting frame (2) and a driving wheel (42) arranged at the left side thereof.

3. The automatic lift carrier according to claim 2, characterized in that the lifting rack (3) has two level meters (31) respectively arranged at both sides thereof, and during a process of the lifting rack (3) moving up and down, the control system continuously reads horizontal parameters generated by said two level meters (31), wherein when the horizontal parameters exceed a set value, the control system adjusts speeds of the frequency inverters, so that the horizontal parameters generated by said two level meters (3) are less than the set value, in order to control the horizontal level at both sides of the lifting rack (3).

4. The automatic lift carrier according to claim 3, characterized in that the driving wheels (42) at both sides are each provided with a second encoder (45) directly connected to a respective coupling (44), and during the process of the lifting rack (3) moving up and down, the control system continuously compares parameters generated by two second encoders (45), wherein when a difference between the parameters exceed a set value, the control system, according to its logic setting, sends out an alarm signal to stop the lift carrier, or adjust the speeds of the frequency converters until the difference is less than the set value.

5. The automatic lift carrier according to claim 1, characterized in that the cable assembly further includes a counter weight (435), a plurality of third driven wheels (436) mounted on the upper portion of the supporting frame (2) at the right and left

sides thereof, and a plurality of fourth driven wheels (437) mounted on the counter weight (435) below, wherein the cable (434) extending from the steering wheel (433) is connected to the supporting frame (2) after passing through the third driven wheels (436) and the fourth driven wheels (437).

6. The automatic lift carrier according to claim 5, characterized in that the cable (434) is a double-row metal chain, and the first driven wheels (431), the second driven wheels (432), the driving wheels (42), the steering wheel (433), the third driven wheels (436) and the fourth driven wheels (437) each have a structure of double-row sprocket.

7. The automatic lift carrier according to claim 1, characterized in that the supporting frame (2) is provided with a vertical rail (24), which is in slide engagement with a sliding groove (32) arranged on the lifting rack (3).

8. The automatic lift carrier according to claim 7, characterized in that a protective net (6) is fixedly provided at a position of the lifting rack (3) where the vertical rail (24) and the sliding groove (32) are in engagement with each other, and also at a position where the cable (434) is connected with the lifting rack (3).

9. The automatic lift carrier according to any one of claims 1 to 4, characterized in that the supporting frame (2) is formed as a rectangular frame.

10. The automatic lift carrier according to claim 9, characterized in that the moving mechanism (1) includes rollers (11) arranged at a bottom of the supporting frame (2), and second motors (12) for controlling rotation of the rollers (11), wherein each roller (11) has a rotating shaft connected with a third encoder.

11. The automatic lift carrier according to claim 9, characterized in that a pair of area sensors (7) are vertically arranged at respectively inner right and left sides of the

supporting frame (2), for detecting a height of article to be carried and a height of article to be removed.

12. The automatic lift carrier according to claim 9, characterized in that ultrasonic sensors (81) are arranged at both sides of a bottom of a front end and a rear end of the lift carrier.

13. The automatic lift carrier according to claim 9, characterized in that a two-dimensional laser scanner (82) is arranged on the upper portion of the supporting frame (2) at a position below an upper limit position of the lifting rack (3).

14. The automatic lift carrier according to claim 9, characterized in that four pairs of thru-beam sensors (83), each pair including an upper thru-beam sensor and a lower, opposite thru-beam sensor, are mounted on a top portion and a bottom portion of four inner corners of the lift carrier.

15. The automatic lift carrier according to claim 9, characterized in that the lifting rack (3) includes two horizontal beams (33), a right one and a left one, and two or more longitudinal connecting bars (34) for connecting said two horizontal beams (33), wherein the bearing mechanism (5) is disposed on said two horizontal beams (33).

16. The automatic lift carrier according to claim 15, characterized in that four bearing mechanisms (5) are arranged on a front portion and a rear portion of said two horizontal beams (33) respectively, wherein each bearing mechanism (5) includes a bearing arm (51), and a third motor (52) for controlling the bearing arm (51) to extend forward or retract backward.

17. The automatic lift carrier according to any one of claims 1 to 4, characterized in that a monitoring probe (84) is arranged at each of a front end and a rear end of the

upper portion of the supporting frame (2), and at each of the right side and the left side of the lifting rack (3).

18. The automatic lift carrier according to any one of claims 1 to 4, characterized in that the lift carrier further comprises a console (91) connecting with the control system, the console (91) being provided with a display (911) and an operation button (912).