rotate by a corresponding one of the motors 311 is quicker than that of the main wheel 309 which is proximal to the inner side wall 212a so that the chassis plate 313 can rotate smoothly.

The guiding wheel sets 304 are mounted to the bottom seat 301 and the chassis plate 313. Each of the guiding wheel sets 304 includes at least one auxiliary wheel 312 rotatable about an axis parallel to the height direction (Z) and being in contact with one of the inner and outer side walls 212a, 212b of the rail 21 to facilitate movement of the locomotive carrier 31 along the rail 21. In this embodiment, the locomotive carrier 31 includes four of the guiding wheel sets 304 respectively proximal to the main wheels 309 and the assistive wheels 310, each of the guiding wheel sets 304 includes two of the auxiliary wheels 312, and the auxiliary wheels 312 of each of the guiding wheel sets 304 proximal to the main wheels 309 flank the corresponding main wheel 309. In other embodiments, the guiding wheel sets 304 may be disposed on lateral sides of the lower casing 307 and each includes one of the auxiliary wheels 312. The charging electrodes 305 are disposed respectively on lateral outer surfaces of the locomotive carrier 31.

In this embodiment, the guideway 211 has a horizontal width smaller than that of the locomotive carrier 31 so as to minimize the area taken up by the

CLAIMS

1. An intelligent meal delivery system adapted to be used in a restaurant including a pick-up region and a plurality of access regions for delivering foods, said meal delivery system comprising:

a rail device including

a rail that is adapted to be disposed in the restaurant, that is adapted to extend along a path along which the access regions are arranged, and that includes an outbound portion, an inbound portion and a return portion interconnecting said outbound portion and said inbound portion, and

a plurality of position tags that are disposed on said rail and that are spaced apart from one another along said rail;

a delivering vehicle movable along said rail, adapted to deliver the foods from the pick-up region to the access regions, and including

a locomotive carrier that includes

a bottom seat,

a carrier plate disposed on and above said bottom seat in a height direction and adapted for carrying the foods, and

a main wheel set disposed on and under said bottom seat, and including a chassis plate that is pivotally connected to said bottom seat and that is rotatable about a vertical axis so as to allow said

bottom seat to steer, two main wheels that are respectively disposed on lateral sides of said chassis plate, and two motors that respectively drive said main wheels to rotate such that said locomotive carrier moves along said rail,

a controller device mounted to said locomotive carrier, configured to control said locomotive carrier, and including a detector module that detects said position tags, a controller module that is electrically connected to said detector module and said motors and that is configured for controlling said motors to drive said main wheels to rotate and controlling said detector module to detect said position tags, and a battery set that is electrically connected to said motors, said detector module and said controller module to provide electricity thereto; and

an operating device communicatively connected to said controller module of said controller device, and including an operating portion that is communicatively connected to said control module and that is operable to transmit an instruction to said controller module, said controller module being configured to control said delivering vehicle according to the instruction;

wherein said rail includes inner and outer side walls horizontally apart from each other to define a

guideway therebetween for guiding movement of said delivering vehicle;

wherein when said locomotive carrier is at said return portion of said rail, a speed at which said main wheel which is proximal to said outer side wall is driven to rotate by a corresponding one of said motors is quicker than that of said main wheel which is proximal to said inner side wall so that said chassis plate can rotate smoothly.

2. The intelligent meal delivery system according to Claim 1, wherein said controller device further includes an obstacle detecting module communicatively connected to said controller module and configured to detect whether or not an obstacle is disposed in front of said delivering vehicle in a direction that said delivering vehicle moves, said controller module being configured to control said motors to stop driving said main wheels when said obstacle detecting module detects an obstacle.

3. The intelligent meal delivery system according to Claim 1, wherein said delivering vehicle further includes a first weighting unit disposed between said bottom seat and said carrier plate, and including a first weight sensor that is disposed under said carrier plate, that is electrically connected to said

controller module, and that is adapted for measuring the total weight of said carrier plate and the foods placed thereon so as to output a weight signal to said controller module accordingly, said controller module being configured to determine whether or not an object is disposed on said carrier plate according to the weight signal received from said first weight sensor, so as to control said motors accordingly.

4. The intelligent meal delivery system according to Claim 1, wherein said rail device further includes a charging station adapted to be disposed in the pick-up region and disposed on said rail for charging said battery set of said delivering vehicle.

5. The intelligent meal delivery system according to Claim 1, wherein said delivering vehicle further includes a driven carrier that is drawn by said locomotive carrier to move along the rail, and that includes a bottom seat, a carrier plate disposed on and above said bottom seat in the height direction and adapted for carrying the foods, and a driven wheel set disposed on and under said bottom seat in the height direction and rotatable along said rail.

6. The intelligent meal delivery system according to Claim 5, wherein:

said delivering vehicle further includes a first weighting unit disposed between said bottom seat and said carrier plate of said locomotive carrier, and including a first weight sensor that is disposed under said carrier plate, and that is electrically connected to said controller module, and that is adapted for measuring the total weight of said carrier plate of said locomotive carrier and the foods placed thereon so as to output a weight signal to said controller module accordingly, said controller module being configured to determine whether or not an object is disposed on said carrier plate of said locomotive carrier according to the weight signal received from said first weight sensor, so as to control said motors accordingly; and

said delivering vehicle further includes a second weighting unit disposed between said bottom seat and said carrier plate of said driven carrier, and including a second weight sensor that is disposed under said carrier plate of said driven carrier, that is electrically connected to said controller module, and that is adapted for measuring the total weight of said driven carrier and the foods placed thereon so as to output a weight signal to said controller module accordingly, said controller module being configured to determine whether or not an object is disposed on said carrier plate of said driven carrier

according to the weight signal received from said second weight sensor and to control said motors accordingly.

7. The intelligent meal delivery system according to Claim 1, wherein said rail includes said guideway having a horizontal width smaller than that of said locomotive carrier.

8. The intelligent meal delivery system according to Claim 7, wherein said locomotive carrier further includes a plurality of guiding wheel sets mounted to said bottom seat and said chassis plate, each of said guiding wheel sets including at least one auxiliary wheel that is rotatable about an axis parallel to the height direction and that is in contact with one of said inner and outer side walls of said rail to facilitate movement of said locomotive carrier along said rail.

9. The intelligent meal delivery system according to Claim 1, wherein said controller module of said controller device stores a delivery map including a plurality of position codes that correspond respectively to said position tags, the instruction transmitted from said operating portion of said operating device including one of said position codes,

said controller module being configured to control said motors to move said locomotive carrier toward one of said position tags corresponding to said one of said position codes included in the instruction, and to control said motors to stop driving said main wheels when said detector module detects the one of said position tags corresponding to said one of said position codes included in the instruction.