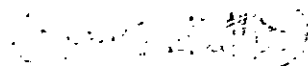


Abstract

This invention present an energy efficient and time saving material handling and synchronisation system for the kitchen. The said material handling and synchronisation system consists of a computer controlled series of material handling and retrieval sub-systems coupled with the sensors. The cook orders for a particular grocery item to the computer controlled panel in the kitchen and that panel connected with this material handling and synchronisation system arranges for the same. The grocery items are stored in the store-room at predetermined locations. The computerised material handling and retrieval system through the "Pick and place" device, picks up the required grocery-bin from the grocery-rack and places it on the kitchen platform. The cook collects the required quantity of the grocery from that grocery-bin and once finished gives the command "Finished/OK". The system then places that grocery-bin back to its defined location in the store-room via "Pick and place" device of the system. The system also weighs the grocery-bin and once the weight of that grocery-bin falls below a standard weight-limit, alerts the cook for the fresh supply of that grocery. This automated material handling and synchronisation system, also takes care of the cleanliness of the grocery items.


(GUDADHE MANGESH VASANTRAO)  X BANSOD SATISH



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I claim,

1. An automated material handling and retrieval system consisting of computer controlled material handling devices such as "Pick and place" devices, sensors for material handling and synchronisation of kitchen items such as grocery, LPG cylinder, water etc.
2. An automated material handling and retrieval system as mentioned in 1 consisting of computer controlled material handling devices such as "Pick and place" devices, sensors for material handling and synchronisation of hospital/dispensary items such as medicines, injectable medicines, blood storage systems, water etc.
3. An automated material handling and retrieval system as mentioned in 1 consisting of computer controlled material handling devices such as "Pick and place" devices, sensors for material handling and synchronisation of Library items such as books, journals, theses, reports etc.
4. An automated material handling and retrieval system as mentioned in 1 consisting of computer controlled material handling devices such as "Pick and place" devices, sensors for material handling and synchronisation of Super-Market/Mall (unmanned shopping store) items such as goods, stationery, garments, books, utensils, food ingredients etc.



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Complete Specification

SMART KITCHEN

Synchronisation modifications in the household-kitchens, eateries, big restaurants, hospitals, libraries etc. are disclosed in the present invention.

In today's kitchens of houses, eateries, big restaurants the status of material handling and synchronisation is faulty. The cook herself/himself has to pick up the grocery, vegetables, utensils from the store-room, refrigerator or baskets, storage-racks respectively. This consumes time as well as energy. Several times, the cook experiences fatigue in handling and synchronising all these materials. In fact, several times due to hurriedness, the cook gets injured as well. Moreover, in the household kitchens the housewife-cook has to keep an eye on the minors. In addition to this, today's this material handling and synchronisation involves material wastage and uncleanliness also. Many times, the cook being not having prior information/idea of the quantity of material required, has to rush for immediate purchase of that material, which is very inconvenient. Therefore, this style of material handling and synchronisation is not efficient and appropriate. Also, this style of material handling and synchronisation is not good for the health also.

The present invention provides a systematic automation of all the material handling and synchronisation acts into the kitchen and removes all the troubles spoken above. This invention changes the complete picture of the household kitchens, eateries, big restaurants etc. making all the material handling and synchronisation dancing on the finger-tips of the cook. The present invention suggests an automated storage and retrieval system that synchronously modifies the working in the kitchen etc.

The kitchen is connected to the store-room of grocery etc. by means of a material handling and retrieval system. A hole of the size of the grocery-bin is created into the wall separating the kitchen and the store-room, and through this hole runs the conveyor or support track/rail of the material handling and retrieval system. In the grocery store-room, each grocery item is stored into a bin having fixed location on the storage-rack/storage-cupboard. The automated "Picking and placing" device of the material handling and retrieval system is computer-programmed about the location and the weight of the grocery bin. If the weight of the grocery into that grocery-bin falls below a predetermined weight, it sends the signal to the control panel asking for the next purchase of that grocery. The travel path of the "Picking and placing" device for each grocery-bin from the storage-rack/cupboard to the kitchen platform and from kitchen platform to storage-rack/cupboard is also programmed. An interactive control unit panel is placed in the kitchen where the cook works.

The cook gives the order of the required grocery item to the control panel. The control panel is connected to the material handling and retrieval system. And, once the input signal from the control panel comes, the automatic material handling and retrieval system through the "Pick and place" device, picks up the required grocery-bin from the storage rack/cupboard

and puts it on the kitchen-platform in front of the cook. The cook collects the required quantity of the grocery from that grocery-bin and then gives "Finished/OK" signal-input to the control panel. The control panel then gives signal to the automated "Pick and place" device and then the automated "Pick and place" device of the automated material handling and retrieval system, picks up the grocery-bin from the kitchen platform and puts/places it to the fixed location of that grocery-bin. Meanwhile, the sensor of the "Pick and place" device, measures the weight of the grocery into that grocery-bin while it is in "picked-up" position and compares it with the standard programmed weight of that grocery. If the weight of the grocery into that grocery-bin falls below the programmed weight of that grocery, the signal is sent to the control panel located in the kitchen and need for next purchase of that grocery is raised. The cook then arranges for the next purchase of that grocery item. After finishing with one grocery item, the cook orders for the second grocery item to the control unit, and the cycle continues.

Once the grocery-item which has fallen below the standard programmed weight is purchased, the cook orders that automated material handling and retrieval system for that specific grocery-item, and the automated material handling and retrieval system puts that grocery-bin on the kitchen platform. The cook then fill up that purchased grocery-item into that grocery-bin, and once finished gives "Finished/OK" command to the system, which then places/puts that grocery-bin at its defined location on the grocery-bin rack/cupboard.

The material handling and retrieval system is also computer-programmed for periodic cleaning of the outer surfaces of the grocery-bin, grocery rack/cupboard and the store-room from dust, moisture, fungus etc.

This material handling and retrieval system is also coupled with Liquid Petroleum Gas (LPG) cylinder, water supply, household medicine containers as explained above. Once the weight of the LPG cylinder falls a predefined value, it raises the need of purchase of the next cylinder. Once the new LPG cylinder is purchased, it is kept on a "Ready-to-replace" platform, and once the LPG cylinder exhausts, the computerised material handling and retrieval system replaces it with the new one, through its another "Pick and place" device. Once the water level in the water vessel falls a particular level, it fills up with fresh supply of water by means of operating the water-tap valve.

Thus this computerised material handling and retrieval system offers energy efficient alternative for material handling and synchronisation. It saves time, avoids fatigue and is neat and clean. More over, it gives a handy solution for better inventory control, thus avoiding inconvenience of eleventh hour purchase of the material.

Description

The detailed description of the invention and the best manner in which it is to be performed is described below.

A hole of the size of the grocery-bin is created into the wall between the kitchen and the grocery store-room. The grocery items are stored separately in a grocery-bin and are kept at fixed locations on the storage-rack/storage-cupboard. Through the hole, a conveyor or support track/rail of the material handling and retrieval system is installed. This conveyor or support track/rail system thus connects kitchen platform and the grocery bin. "Picking and placing" device of is established for material handling and retrieval and is computer programmed about the location and weight of the grocery item. "Picking and placing" device is also computer programmed for its travel path from storage-rack/cupboard to kitchen platform and reverse to storage-rack/cupboard. An interactive control unit/panel is installed at the finger-tips of the cook for different operations.

The cook orders the required grocery item into the interactive control unit/panel. The input signal from the interactive control unit/panel activates the automatic material handling and retrieval system and it in turn through the "Pick and place" device, picks up the required grocery-bin from the storage rack/cupboard and puts it on the kitchen-platform in front of the cook.

This material handling and retrieval system is also connected to the Liquid Petroleum Gas (LPG) cylinder, water supply, household medicine containers etc. and gives its service for the activities linked with them.

Energy efficient, faster and fatigue-free service is available with this computerised material handling and retrieval system. Moreover this system is hygienic too.

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4. An automated material handling and retrieval system as mentioned in 1 consisting of computer controlled material handling devices such as "Pick and place" devices, sensors for material handling and synchronisation of Super-Market/Mall (unmanned shopping store) items such as goods, stationery, garments, books, utensils, food ingredients etc.



(GUDADHE MANGESH VASANTRAO)



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