PICKING AND SHIPPING METHOD

Inventor: Matthias Stoetzner, Seligenstadt (DE)

Assignee: Demaic GmbH, Offenbach (DE)

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ABSTRACT
The invention relates to a combined picking and shipping method according to the goods-to-person principle. Shipping containers (VB) and packaging units (VP) are conveyed to a shipping station, and a packer at the shipping station manually packs packaging units that are directly conveyed to the shipping station onto a corresponding shipping unit (VE), said packer gathering individual articles (A) that are conveyed to the shipping station in a shipping container (VB) provided at the shipping station.
PIECING AND SHIPPING METHOD
CROSS REFERENCE TO RELATED APPLICATION


BACKGROUND OF THE INVENTION

[0002] The invention relates to a combined picking and shipping method in accordance with the goods-to-person principle wherein shipping containers and packing units are supplied to a shipping station and a packer at the shipping station manually packs packing units—directly supplied to the shipping station—onto a corresponding shipping unit.

[0003] During a picking procedure, often diverse product ranges are to be handled. In addition to packing units which can be packed directly on shipping units, there is the requirement in the case of smaller articles to pick these into a shipping container and then to pack this shipping container onto the shipping unit as a packing unit (cf. Gudehus, Timm, Logistik, Springer 1999, chapter 12, pages 325 ff.). This is also true, e.g., for fragile articles which must be handled particularly carefully and packed safely and also for high-value articles which must be packed securely to protect them from theft.

[0004] DE 10 2006 025 617 A1 discloses a workstation for packing articles—which are to be picked—onto a shipping support, wherein the workstation includes a packing station, a platform on which the packing station is arranged, a shipping support station arranged beneath the platform, a lifting device for lifting an empty or partially packed shipping support to a height of the packing station so that the empty or partially packed shipping support can be packed with articles which are to be picked, and for lowering completely packed shipping supports, and a track tilted towards the packing station for transporting individual articles which are to be picked to the packing station. A conveyor technique for load supports which conveys articles, which are to be picked, on load supports to the packing station in such a manner that either articles from the track or from the conveyor technique can be packed.

[0005] In automated picking systems in accordance with the “goods to person” principle, the picker is provided at his workstation with small supplied articles for each order. These are then placed into the shipping containers as the packing unit. Then, the shipping containers are supplied to a shipping station where the containers connected with other larger packed goods or packing units are packed onto a corresponding shipping unit, e.g., pallet or roller car.

[0006] The other larger packed goods or packing units can be supplied directly from the store to the shipping region with suitable practicability, since their properties and in particular their size and insensitivity permit direct packing onto the shipping unit (roller container, palette, etc.).

[0007] The two stages required for the picking and shipping process for the small articles which cannot be packed directly onto the shipping unit result in uneconomical systems having two partial systems and limitations associated therewith such as long throughput times, the total speed is determined by the slowest step and the need to synchronize the processes.

[0008] Alternatively, the two packed goods groups would have to be shipped separately.

SUMMARY OF THE INVENTION

[0009] The present invention is to provide a method for the picking and shipping process which at least partly obviates the above disadvantages and permits flexible handling of small, expensive or sensitive articles.

[0010] A combined picking and shipping method in accordance with a goods-to-person principle, according to an aspect of the invention, includes supplying shipping containers and packing units to a shipping station and manually packing the packing units to a shipping unit at the shipping station. Individual articles are supplied to the shipping station and gathered in one of the shipping containers at the shipping station.

[0011] By virtue of the fact that the packer gathers individual articles, which are supplied to the shipping station, in a shipping container provided at the shipping station, i.e., the packer packs the small, expensive or sensitive articles into packing units directly at the shipping station without additional preliminary picking stages, it is possible to accelerate the picking and shipping process and to make it more rational since separate regions are no longer absolutely required.

[0012] The functions of the picker and those of the packer virtually merge with each other, in particular for the small, expensive or sensitive articles. While the picker implements the activity of packing filled shipping containers (packing units) and larger packed goods onto a shipping unit, individual articles are additionally also supplied to the packer, which articles are packed into a shipping unit in a provided shipping container for the respective order. As soon as the shipping container is full or the order is complete, the shipping container is possibly closed, possibly placed on the shipping unit as packing units and the shipping unit is shipped.

[0013] The shipping container for the individual articles can on the one hand already be provided on the shipping unit during filling or can be packed on the shipping unit after filling. The shipping container is then positioned at the workstation of the packer in an ergonomic position within reach of the packer.

[0014] The shipping container to be filled with the individual articles at the shipping station can likewise be supplied to the packer via the conveyor belt used for the articles or can be provided separately.

[0015] In the present case, “packing unit” is understood to mean a smallest unit of a shipment which is capable of being shipped as is on a shipping unit.

[0016] In the present case, “article” is understood to mean goods which are present in an unpacked and loose state having completely different, non-uniform shapes and sizes and are not capable of being shipped alone (cf. Gudehus, Timm, Logistik, Springer 1999, chapter 12, pages 325 ff.). It is understood that the word “article” is also used for bundled articles which are likewise not capable of being shipped alone, e.g., owing to their sensitive properties. In particular, the small, expensive or sensitive articles are suitable for the method in accordance with the invention since otherwise these would always have to be processed and handled separately.

[0017] Therefore, the method in accordance with the invention is suitable in particular for central distribution warehouses of retail businesses from where the businesses are
supplied with goods that are required for refreshing or restocking or supplementing their range. It is frequently the case that, in addition to goods which are simple to pack or ship, small parts are required, namely the articles mentioned above which, individually, are not capable of being shipped such that they could be packed for shipment onto the corresponding shipping units, such as a pallet or roller car.

[0018] It is understood that within the scope of the invention, it is also possible to supply shipping containers—previously filled by a picker—to the shipping station as is typical.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] Further details of the invention will be apparent from the following description of an exemplified embodiment with the aid of the drawing, in which Fig. 1 schematically illustrates a flow diagram of the sequence of a combined picking and shipping method in accordance with the goods-to-person principle in a distribution warehouse of retail businesses which is referenced as a whole with the numeral 1; and Fig. 2 schematically illustrates an exemplary shipping unit.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0021] The distribution warehouse of retail businesses is supplied with articles A via an inlet 2. After processing orders for supplying retail businesses, shipping units VE leave the distribution warehouse via an outlet 3.

[0022] When processing supply orders, the requested number of articles A of the most varied type are gathered for the respective order and packed onto a (or several) corresponding shipping unit VE.

[0023] For this purpose, the articles A are initially stored intermittently in a storage area 4, entering via the inlet 2. The articles A can be repositioned in product containers depending upon the type of delivery, e.g., on pallets or in cartons or can also be stored in the cartons. Likewise, it is possible to not depalletize the articles but to store them on the pallets. The most varied types of storage are feasible and are known in principle.

[0024] For completing an order, the different articles are, as is already known, now successively guided in sufficient amounts, e.g., in picking stations 5 storing product containers where the picker places the articles A of an order into corresponding shipping containers VB.

[0025] The still partly filled product containers are returned to the storage area 4 and the completely filled shipping containers VB are either stored intermittently in the storage area 4 or are further conveyed to shipping stations 6.

[0026] In the shipping stations 6, packers pack the shipping containers VB—previously filled by the picker—and manually pack packing units VP—directly supplied to the shipping station 6 from the storage area 4—on a corresponding shipping unit VE.

[0027] The packing units VP directly supplied to the shipping station 6 from the storage area 4 are thus designed such that they can be packed and safely transported on the shipping unit VE without any additional repacking, etc. They do not need to make the detour via the picking station. It is understood that if an order contains no articles A which do not have to be picked, or the article range is appropriate, the picking step can be bypassed and the packing units VP are directly supplied to the shipping station 6.

[0028] However, a mixed operation is often required since modern retail businesses sell a thoroughly diverse product range and correspondingly have to be supplied with such a range.

[0029] In accordance with the illustrated embodiment, the packer is also supplied with minimum amounts of individual articles A supplied to the shipping station 6. He can then gather these into a particular shipping container VB provided at the shipping station 6.

[0030] If, for example, a small rural retail business requests four toothbrushes, then possibly it may not be worthwhile to pick these individually and the toothbrushes are supplied to the packer at the shipping station 6. At that location, the packer packs the toothbrushes together with expensive articles A such as razor blades or high-value creams into the shipping container VB which is additionally provided for this purpose.

[0031] The shipping container VB for the individual articles can already be provided on the shipping unit VE during filling or it can be packed onto the shipping unit after filling, i.e., it is arranged adjacent to it during filling.

[0032] While the foregoing description describes several embodiments of the present invention, it will be understood by those skilled in the art that variations and modifications to these embodiments may be made without departing from the spirit and scope of the invention, as defined in the claims below. The present invention encompasses all combinations of various embodiments or aspects of the invention described herein. It is understood that any and all embodiments of the present invention may be taken in conjunction with any other embodiment to describe additional embodiments of the present invention. Furthermore, any elements of an embodiment may be combined with any and all other elements of any of the embodiments to describe additional embodiments.

1. Combined picking and packing method in accordance with a goods-to-person principle, said method comprising:
   - supplying shipping containers and packing units to a shipping station;
   - manually packing the packing units to a shipping unit at the shipping station;
   - supplying individual articles to the shipping station and gathering the individual articles in one of the shipping containers at the shipping station.
2. The method as claimed in claim 1, including providing the shipping container for the individual articles to the shipping unit prior to filling of that shipping container.
3. The method as claimed in claim 1, wherein a filled shipping container that is filled with individual articles is packed onto the shipping unit.
4. The method as claimed in claim 2, wherein shipping containers previously filled by a picker are also supplied to the shipping station.
5. The method as claimed in claim 2, wherein shipping containers previously filled by a picker are also supplied to the shipping station.
6. The method as claimed in claim 3, wherein shipping containers previously filled by a picker are also supplied to the shipping station.

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