A solution is to be created with a device for storing and transferring products in small packets as an independent, tower-like structure to be set up in traffic areas, with which a compact interim storage area can be made available at any desired location, particularly in the region of generally accessible traffic areas, for example pedestrian shopping zones or the like, whereby the loading position does not necessarily have to agree with the removal position.

This is achieved in that the tower (2) has a plurality of positioning levels (5) located one above the other, each having a plurality of positions for the products and/or for containers (6) that hold products, as well as an operating device (7) that reaches each position, and having at least one access level for the user, who is located in the traffic space, to remove or empty a container (6) intended for him/her and/or the small packet intended for him/her, wherein each removal position is provided with an opening and closing device that allows access to the container (6) located at this position and/or to the small packet, to remove it, while simultaneously preventing access to the container interior or to other removal positions.
DEVICE FOR STORING AND TRANSFERRING PRODUCTS IN SMALL PACKETS

[0001] The invention is directed at a device for storing and transferring products in small packets as an independent, tower-like structure to be set up in traffic areas.

[0002] There are different systems for positioning products at least temporarily and allowing access for authorized users, whereby in this connection it is also known to offer containers to the user that have a different temperature from that of the ambient temperature, for example. Such a system with a freezer can be shown in DE 196 39 696, for example, as a locker system.

[0003] An automatic locker system is presented, for example, in the essay “Fordertechnik 12/2000,” whereby the locker system in the main train station of Cologne has an input/output terminal for luggage to be positioned there. Such a system is complicated in design, since it must be designed for relatively high output and turnover numbers, in order to make sufficient positions available during seasonal high volume.

[0004] From DE 24 47 618, a device for automatic unloading and/or loading of items, for example hanging clothes on chain conveyors of dry-cleaning establishments, or the like, is known, whereby the desired product, in each instance, can be brought to an unloading position by means of prior and appropriate control. A device for transport of drawers arranged in shelves on rails and rollers, structured essentially as a carousel, is furthermore shown in DE 32 23 426 U1, whereby an operating device centrally surrounded by receiving positions is provided within the device.

[0005] Thanks to the possibility of purchasing products by way of electronic media, for example, the turnover of goods is increasing, and it is also increasingly being exercised by private distributors. In this connection, it can be practical, for example in a large city, to set up a plurality of interim storage areas, whereby the interim storage area is filled with products by means of larger vehicles, for example, while further transport to the customer takes place in the retail distribution sector, or the customer himself/herself picks up the products at the interim storage area. An example to be mentioned here is the “e-Commerce” system, interim storage areas of supermarkets, which compile orders and make them available to the customer, book stores, video stores, CD stores, or toy stores or the like.

[0006] In the case of conventional lockers or also in the case of the cooled compartments already mentioned above, input and output are generally identical, whereby this restricts the capacity, since several compartment positions remain empty until they have been filled again.

[0007] It is the task of the invention to create a solution with which a compact interim storage area can be made available at any desired location, particularly in the region of generally accessible traffic areas, such as pedestrian shopping zones or the like, whereby the position of loading does not necessarily have to agree with the removal position.

[0008] This task is accomplished with a device of the type indicated initially, by means of the characterizing features of claim 1.

[0009] By means of the design as a tower, particularly a round tower, comparatively large storage capacities and a maximum of removal openings can be achieved on a small area, whereby towers can be constructed in such a way that they can be reached over a large area of their circumference. Thus it is possible, using this method of construction, to spatially separate the loading position, on the one hand, and the removal position or positions, on the other hand, e.g. to have a loading position on a delivery level, while the removal position is accessible from a pedestrian level, for example, if the system is aimed directly to the end user. The tower construction also makes it possible to lower at least a comparatively large region of the capacity below ground level, without additional space being required for this.

[0010] Because the containers are structured with a blockable drawer, vandalism, in particular, can be prevented in the traffic area using comparatively simple means, and also removal of container contents that are not intended for the corresponding persons can be prevented.

[0011] Further developments of the invention are evident from the dependent claims. In this connection, it can be particularly practical if each container is positioned so that it can be pulled out in a drawer that blocks the removal opening towards the inside, but cannot be removed.

[0012] A particular feature of the invention consists of the fact that the container in question blocks the removal opening in the removal position, in such a way that access to the container interior is assured, but access to the interior of the device is blocked. This structure guarantees that no vandalism can occur, and that in particular, no access is possible to containers that are not intended for the person authorized to open the compartment.

[0013] In this connection, it can also be provided that each container and/or the corresponding drawer is arranged to tilt in the removal position and pulled-out position.

[0014] Both of the features mentioned above serve the purpose of allowing the most convenient access possibility to the container interior, whereby the drawer system presents a blocking possibility that is easy to handle in technical terms, and prevents unauthorized removal from the container.

[0015] Another protection possibility can consist, according to the invention, of the fact that each container in the drawer is equipped with a computer-controlled, particularly time-switched retraction drive, i.e. if the removal opening, with the container pulled out, is left in the open position, accidentally or intentionally, a retraction mechanism is activated, for example by way of a time relay, which pulls the drawer and/or the container back into the interior of the device, and thereby opens up the possibility of making the removal opening, which was previously blocked, available for third users again.

[0016] A particular advantage of the invention consists of the fact that at least certain regions of the tower are structured for the storage of objects that have a lower or higher temperature as compared to the ambient temperature, in accordance with their purpose. For example, a cooling region can be provided in the region of the tower that is sunk below ground level, which serves to save insulation and takes advantage of the fact that cold air sinks down, so that the lower region can be structured as a cooling zone, in simple manner.
[0017] Vice versa, other regions can also be structured as a freezer zone or even, if this is desired, as a heating zone, whereby it is practical if the latter then is at a relatively great distance from a cooling zone, if both types of zones are located in the device.

[0018] A plurality of removal positions for the end user can be provided at the circumference of the tower. In the same manner, the delivery zone can be structured in such a way that a plurality of loading levels and loading spaces are released, for example by way of a roll-up door, which can then be charged with products, whereby, as already mentioned above, the removal zone can have a different position from the filling zone.

[0019] The operating device can be provided in the device in different embodiments. For example, as a tower conveyor device, it can be arranged on a central mast that is either positioned so as to rotate itself or, if a hydraulic lifting cylinder is involved, a rotation of the load holding means around the drive or at the tip of the drive takes place, for example. The tower conveyor device can be structured as a portal conveyor device or other similar device.

[0020] Additional characteristics, details and advantages of the invention are evident from the following description, as well as on the basis of the drawing. This shows, in

[0021] FIG. 1 a simplified spatial representation of the device, partly in cross-section,

[0022] FIG. 2 a top view in a simplified representation,

[0023] FIG. 3 a simplified representation in cross-section, as the loading and removal position, as well as in

[0024] FIG. 4 a detailed view of a drawer with loading aids.

[0025] The device, indicated in general as 1, consists, in the example shown, of a tower-like structure 2 having a region 4 that is sunk below the handling level 3, and a region that projects above ground level. A plurality of positioning levels, located one above the other, indicated in general as 5, is arranged in the interior of the tower 2, and this also holds true for the basement region 4 that lies below ground level, whereby a plurality of containers, indicated in general as 6, is arranged or can be positioned in the individual levels.

[0026] To handle the containers 6, at least one central conveyor device is provided; in the example shown in FIG. 1, it is structured as a portal hoist 7 having a drive unit 8 and equipped with a telescoping conveyor 9, whereby this conveyor device can also be structured differently.

[0027] In order to be able to operate all the positions, the conveyor device can be moved up and down as shown by the double arrow. It can rotate by way of a turntable on the floor and in the ceiling region of the device, for example, as indicated by a double arrow 11, whereby the load holding means is structured so that it can telescope in one level, as indicated with the double arrow 12 in FIG. 1.

[0028] To call up a container 6, i.e. to reach its contents, removal windows 13 are arranged on at least one side of the tower 2, whereby access is possible, for example, by way of a specific personal identification number, by way of a terminal indicated as 14, which is shown outside of the device 2 here, for reasons of the illustration; it can also be an integral part of the exterior wall of the device or can be called up in different manner, for example by way of a hand-held telephone. If a user desires access to a compartment, he/she inputs his/her corresponding code or the call-up number or another type of identification, the container 6 assigned to him/her is positioned in front of the window 13 in the interior of the tower 2, the window 13 opens, and access is possible.

[0029] In this connection, each container can be arranged in a type of drawer 17 (FIG. 3). By way of this drawer 17, it is possible to pull the container partly out of the window 13, and to tilt it down, if necessary, in order to facilitate access to the container interior.

[0030] In order to also allow cooled container positions in the interior of the tower 2, the lower tower region indicated as 4, for example, can be provided with a cooling device, referred to in general in FIG. 1 as 15, and shown only very schematically.

[0031] The delivery position is indicated as 16. Here, the wall of the tower 2 can be structured as a sliding door, in order to allow simultaneous loading of a plurality of containers by a delivery person.

[0032] Of course, the exemplary embodiment of the invention, as described, can still be changed in many different respects, without thereby departing from the basic idea. For example, the invention is not limited to the tower shown, which is round in cross-section; here, other cross-sectional shapes can also be provided, for example a tower that is elliptical in cross-section, having two shelf conveyors in the foci of the ellipse, for example, or a correspondingly controlled central shelf conveyor that telescopes to different distances; depending on the installation situation, at least partly angular cross-sectional shapes can also be provided, and the like. In the case of a group of persons with different access authorizations, the removal positions can be separated from one another accordingly; of course, this can also apply for the loading positions, and the like.

1. Device for storing and transferring products in small packets as an independent, tower-like structure (2) to be set up in traffic areas, characterized in that

the tower (2) has a plurality of positioning levels (5) located one above the other, each having a plurality of positions for the products and/or for containers (6) that hold products, as well as an operating device (7) that reaches each position, and having at least one access level for the user, who is located in the traffic space, to remove or empty a container (6) intended for him/her and/or the small packet intended for him/her, wherein each removal position is provided with an opening and closing device that allows access to the container (6) located at this position and/or to the small packet, to remove it, while simultaneously preventing access to the container interior or to other removal positions.

2. Device according to claim 1, characterized in that

each container (6) is positioned so that it can be pulled out in a drawer that blocks the removal opening towards the interior, but cannot be removed.
3. Device according to claim 2, characterized in that each container and/or the corresponding drawer is arranged to tilt in the removal position and pulled-out position.

4. Device according to claim 3, characterized in that each container is provided, in the drawer, with a computer-controlled retraction drive, particularly a time-switched retraction drive.

5. Device according to claim 4, characterized in that the device (1) is structured as a shelf tower (2) having a round cross-section and a central shelf operating device (7).

6. Device according to one of the preceding claims, characterized in that a plurality of removal positions (13) is structured at the circumference of the tower (2) for the end user.

7. Device according to one of the preceding claims, characterized in that at least specific regions (4) of the tower (2) are structured for the storage of objects that have a lower or higher temperature as compared to the ambient temperature, in accordance with their purpose.

8. Device according to one of the preceding claims, characterized in that at least one zone of the tower (2) is structured as a heating zone, as a cooling zone (4), and/or as a freezer zone.

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