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(54) **METHOD AND TRANSPORT BOX FOR HANDLING SHIPMENTS**

(57) Method and transport box (1) for handling shipments (9), which are collected and transported in a vehicle and offloaded at a destination location. Before transportation the shipments are collected in the transport box. Collecting or offloading of the shipments from the trans-

port box takes place at a plurality of places. A transport box may be used comprising a bottom (2) and a set of wall elements (3), at least one of the wall elements being releasably connectable to said bottom.

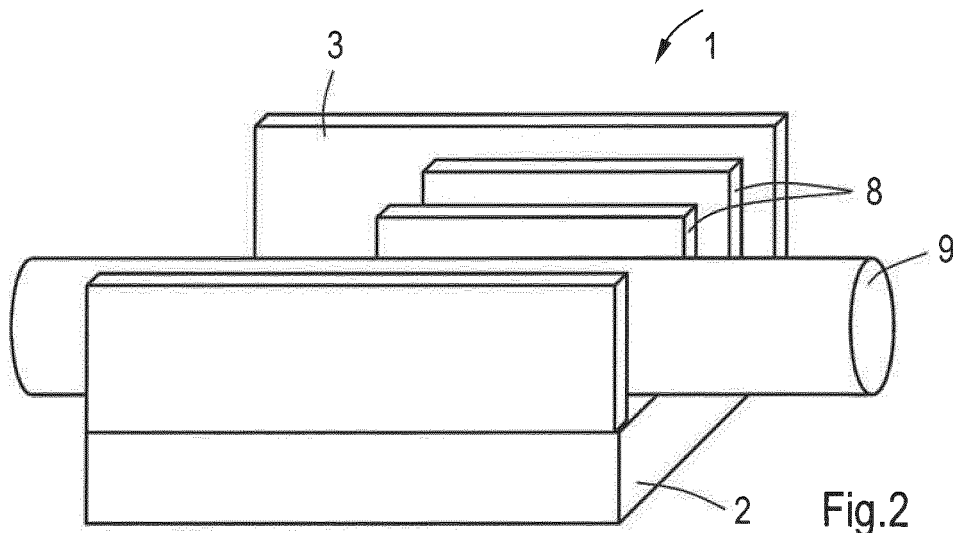


Fig.2

Description

[0001] The present invention relates to a method and a transport box for handling shipments, in particular for collecting and transporting shipments of various sizes, e.g., by courier, post or express services.

[0002] Such shipments may have a large variety of shapes and sizes, ranging from small shipments to very large items, such as flat screen TV's and the like. Shipments are typically collected at an intake, such as a customer or a collection point, and transported by a vehicle to a distribution center. In current practice, they are unloaded one by one on a conveyer, collected in wheeled cages and checked-in. Then they are sorted. Shipments for the same destinations are loaded in the same cages, which are subsequently unloaded to ship the shipments in a larger vehicle heading for the respective destinations.

[0003] This chain of loading and unloading is time consuming and laborious. Therefore, it is an object of the invention to provide a more efficient and less laborious way to handle shipments during shipment.

[0004] The object of the invention is achieved with a method for handling shipments. The shipments are collected and transported in a vehicle and offloaded at a destination location. Before transportation the shipments are collected in a transport box. Either collecting or offloading of the shipments from the transport box takes place at a plurality of places. For instance, the shipments can be collected from a plurality of senders and offloaded at a point of further distribution. Alternatively, the shipments are loaded at a point of distribution and respectively distributed to a plurality of receivers.

[0005] The method according to the invention substantially reduces time for handling the shipments, such as loading and unloading times, and makes it less burdensome for the involved workers. Notwithstanding the large size of a substantial part of the shipments it was found that the use of a transport box contributes to considerable improvement of shipping efficiency.

[0006] The shipments can be stabilized in the transport box to reduce relative movement of the shipments in the vehicle.

[0007] The method may, e.g., include the step of sorting shipments per different destination location and collecting shipments in a plurality of transport boxes, each transport box being used for a single destination location.

[0008] In a specific embodiment, a transport box is used with a bottom and removable side wall elements connected to the bottom by a releasable attachment. Such a box can be adjusted to the dimensions of the shipments to be transported, which may vary considerably with each shipment. This is particularly the case if the removable side wall elements can selectively be connected to the bottom in a variety of positions or on top of each other. With such a system the walls can effectively stabilize the shipments and keep them in place during transport. This help to reduce the risk of damages of the shipments during transport.

[0009] In a specific embodiment, a transport box is used with a bottom which comprises an array of spaced first fastening elements, such as openings. The wall elements have lower edges that may be provided with a row of correspondingly spaced second fastening elements, such as pins, matching the first fastening elements to provide a releasable connection. Such a connection can for example be a regular pin-in-hole connection, e.g., providing a tight fit between the engaging fastening elements, or a snap joint or similar connection.

[0010] Alternatively, the first fastening elements of the bottom can be projections, while the second fastening elements of the wall elements can be matching openings or recesses.

[0011] Other releasable attachments can also be used, such as for instance a row of parallel grooves in the bottom slidably receiving matching profiled lower edges of the wall elements.

[0012] Such a modular set-up of fastening elements allows selective positioning of the side wall elements. If the array of first fastening elements is a rectangular array, the wall elements can be attached to the bottom in positions extending in at least two orthogonal directions, e.g., in the length and width directions of the bottom.

[0013] The wall elements can selectively be positioned on the bottom to provide a configuration suitable for carrying a large variety of shipments, including shipments that are larger than the length and width of the bottom.

[0014] A suitable arrangement of wall elements may also allow stabilizing shipments in the box during transport. Regardless of their size the shipments can be stabilized by spacing two wall elements by a distance forming a close fit with the shipment in question. The shipments cannot move around the cargo space of the vehicle during transport so the risk of damaging is substantially reduced. It also makes it possible to leave one or more sides of the box open to enhance the accessibility of the transport box.

[0015] The modular set-up may also make it possible, for example, to attach at least one of the wall elements to the bottom in a position where it protrudes from the bottom towards an interior wall of the vehicle. Optionally, two wall elements may protrude from two opposite bottom sides. The protruding wall elements form bumpers reducing freedom of movement of the box in the cargo space of the vehicle.

[0016] Optionally, one or more of the wall elements may be provided with third fastening elements identically spaced and shaped as the first fastening elements of the bottom. This makes it possible to attach a wall element on top of one or two other wall elements. Such wall elements may for example be stacked in a staggered pattern, e.g., two aligned adjacent wall elements attached to the bottom can be secured to each other by attaching on top of them an overlapping third wall element.

[0017] During unloading the box can be lifted, for instance by means of a lifting device, such as a forklift. To this end, the bottom may have a profiled lower side suit-

able for engaging fork elements of a forklift.

[0018] Optionally, the transportbox may comprise wheels, such as caster wheels or any other suitable type of wheels.

[0019] The invention also relates to such a transport box as such, and to a kit of parts for building up such a box. Such a kit may for example also include other elements, such as angled wall elements, contoured wall elements shaped to hold shipments of a particular shape, open wall elements, grips or handles, second or further floor elements, braces and/or binders or the like.

[0020] The box may have an outer width allowing it to be loaded into a regular vehicle. It may have a height and length allowing it to contain at least a regular load of differently sized shipments. The outer width of the transport box may for example be at least 500 mm, e.g., at least 800 mm, e.g., at least 1 m. The length of the box may for example be at least 800 mm, e.g., at least 1000 mm, e.g., at least 1200 mm. The height of the wall elements may for example be at least 200 mm, e.g., at least 500 mm, e.g., at least 800 mm. Optionally, the transport box may have wall elements of different heights and/or lengths.

[0021] The box may be made of any suitable material. Light weight impact resistant plastics, such as HDPE, are preferred. Preferably, the weight of the empty transport box should be less than about 50 kg.

[0022] The loading capacity of the transport box will depend on the positioning of the wall elements on the bottom. In case four wall elements border the edges of the bottom, the loading capacity should preferably be at least 500 liters.

[0023] The invention will be further explained with reference to the accompanying drawings.

Figure 1: shows schematically in perspective view an exemplary embodiment of a transport box according to the invention;

Figure 2: shows the transport box of Figure 1 with a shipment;

Figure 3; shows a further possible configuration of wall elements in the cargo space of a vehicle

Figure 1 shows a transport box 1 comprising a rectangular bottom 2 and a set of wall elements 3, which are releasably connectable to the bottom 2. Two wall elements 3 are positioned at opposite end sides of the bottom 2. A third wall element 3 is being positioned between the two other wall elements 3 to form a box configuration with one open side 4.

[0024] The bottom 2 comprises an array of regularly spaced openings 5 of substantially equal size and shape. The wall elements 3 have lower edges 6 provided with a row of correspondingly spaced and shaped pins 7. Each of the pins 7 fits within each of the openings 5 with a tight fit to provide a releasable pin-in-hole connection.

[0025] The corresponding spatial arrangement of pins 7 and openings 5 makes it possible to attach the wall elements 3 in any desired position extending parallel to

the length or width direction of the bottom 2. As shown for example in Figure 1, a transport box can be built with wall elements 3 at three sides and one open side 4, or a transport box with four wall elements 3 forming a box with four closed sides.

[0026] Figure 2 shows the box 1 with another possible arrangement of the wall elements 3, combined with smaller wall elements 8 with a lower height and a smaller length. The two wall elements 3 are arranged at two opposite sides of the bottom 2. In the shown configuration, the two wall elements 3 and the smaller wall elements 8 are parallel. A longitudinal shipment 9 is disposed between one of the wall elements 3 and a smaller wall element 8. The distance between the wall element 3 and the smaller wall element 8 is chosen such that it forms a tight fit with the shipment 9. This fixates and stabilizes the shipment during transport in a vehicle.

[0027] With the configuration of Figure 2, the box 1 can for example be put in a van or similar vehicle with the wall elements 3, 8 extending in longitudinal direction of the car. This way, the box 1 is easily accessible for a driver, and shipments can easily be loaded into the box 1.

[0028] Alternatively, the wall elements 3, 8 may extend in transversal direction of the vehicle. In such a position the box 1 can be stabilized in the cargo space of the vehicle by positioning one of the wall elements 3 on the bottom 2 in such a way that it protrudes from one side of the bottom 2.

[0029] Optionally, the two wall elements 3 may protrude from the bottom 2 in opposite directions, as is shown in Figure 3. The overhanging parts of the wall elements 3 form bumpers reducing freedom of movement of the transport box 1 in the cargo space of the vehicle. In Figure 3, the interior of a van 11 is schematically drawn with the overhanging parts of the wall elements 3 hooking behind the wheel housings 12, preventing the box 1 from sliding during driving.

[0030] At their upper edges the wall elements 3 are provided with third fastening elements 13 formed as openings which are shaped and spaced identically to the openings 5 in the bottom 2. This enables positioning of a further wall element 3 on top of the two wall elements 3 attached side by side on the bottom.

[0031] A driver collects shipments from different sources and loads them in the transport box in the cargo space of a vehicle. After collection of all shipments, the driver returns to a distribution center, where they are unloaded from the vehicle by a forklift or other suitable lifting device. If needed the transport box 1 is lifted to a convenient height for further handling, e.g., unloading the shipments from the box, checking the shipments in, and sorting the shipments by their shipping destinations.

Claims

1. Method for handling shipments, wherein the shipments are collected and transported in a vehicle and

- offloaded at a destination location, **characterized in that** before transportation the shipments are collected in a transport box and wherein either collecting or offloading of the shipments from the transport box takes place at a plurality of places.
2. Method according to claim 1, wherein the shipments are stabilized in the transport box to reduce relative movement of the shipments in the vehicle.
 3. Method according to claim 1 or 2, wherein a transport box is used with a bottom and removable side wall elements connected to the bottom by a releasable attachment.
 4. Method according to claim 3, wherein the removable side wall elements can selectively be connected to the bottom in a variety of positions.
 5. Method according to claim 4, wherein the bottom comprises an array of spaced first fastening elements, such as openings, and wherein the wall elements have lower edges provided with a row of correspondingly spaced second fastening elements, such as pins, matching the first fastening elements to provide a releasable connection.
 6. Method according to claim 5, wherein during transport at least one of the wall elements is attached to the bottom in a position where it protrudes from the bottom towards an interior wall of the vehicle.
 7. Method according to any one of the preceding claims, wherein the transport box is lifted during unloading by means of a lifting device, such as a fork lift.
 8. Method according to any one of the preceding claims, wherein the destination location is a distribution center.
 9. Method according to any one of the preceding claims, including the step of sorting shipments per different destination location and collecting shipments in a plurality of transport boxes, each transport box being used for a single destination location.
 10. Transport box comprising a bottom and a set of wall elements, at least one of the wall elements being releasably connectable to said bottom.
 11. Transport box according to claim 10, wherein the bottom comprises an array of spaced first fastening elements, such as openings, and wherein the wall elements have lower edges provided with a row of correspondingly spaced second fastening elements, such as pins, matching the first fastening elements to provide a releasable connection.
 12. Transport box according to claim 11, wherein at least a part of the wall elements have upper edges with third fastening elements identically spaced and shaped as the first fastening elements in the bottom.
 13. Transport box according to claim 10, 11 or 12 comprising wall elements of different heights and/or lengths.
 14. Transport box according to claim 11, 12 or 13 wherein the bottom has a lower side which is profiled for engaging fork elements of a lifting device, such as a forklift.
 15. Transport box according to any one of the preceding claims, wherein the transport box comprises wheels.
 16. Kit of parts comprising a bottom and a plurality of wall elements to form a transport box according to claim 10, 11, 12, 13 or 14.

