

[54] **MANUAL CONLOCK**

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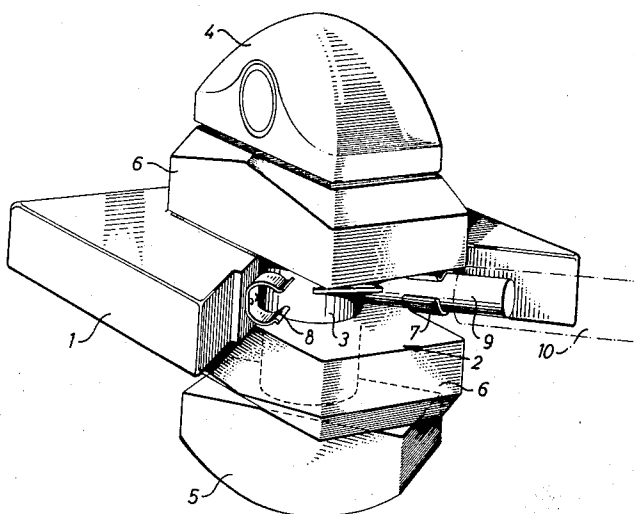
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[57]

ABSTRACT

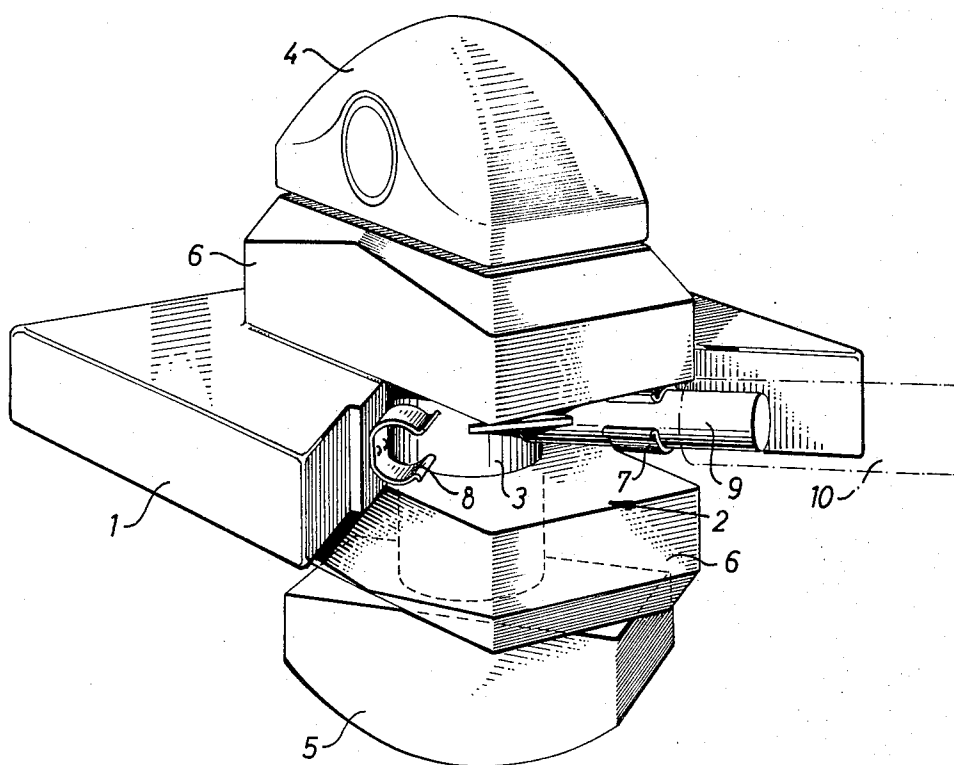
A manually vertical coupling device for disengageably securing a freight container to another container or to a loading platform. The coupling device is a separate unit having turnable twist-locks extending in opposite directions, which twist-locks in an initial position are insertable in elongate apertures in the corner castings of a container. The body of the coupling device is a solid mass having a through shaft turnably journaled therein. The shaft is integral with the twist-locks and is manually actuatable between a non-clamping position and a clamping position for securing the containers.

8 Claims, 1 Drawing Figure



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MANUAL CONLOCK

The present invention broadly refers to manually operable vertical coupling devices for disengagably securing a freight container to another container and/or to a loading platform.

The previously known coupling devices of manually operated type have not been easy enough to handle, and the previously known devices have neither embodied enough strength to be able to resist the great stresses encountered during transportation of large containers without risk of damage, thus leading to operational difficulties or in the worst case being completely collapsed and unusable.

The above indicated drawbacks of the previously known devices are eliminated in accordance with the present invention relating to a manually operable vertical coupling device for disengagably securing a freight container to another container and/or to a loading platform, said device being a separate unit provided with turnable twist-locks extending in opposite directions, said twist-locks in an initial position being insertable in elongate apertures in corner castings of a container. The invention is characterized in that the body of the coupling device is a solid mass having a through shaft turnably journaled therein, said shaft being integral with the twist-locks and manually actuatable between a non-clamping position and a clamping position for securing the containers.

A preferred embodiment of the invention will now be described with reference to the attached drawing, which in a perspective view shows a coupling device according to the invention seen from the side provided with the operating handle, some underlying portions being shown by broken lines.

The coupling device according to the invention comprises a solid body 1 preferably cast or swaged in one piece. A turnable shaft 3 is rotatably journaled in the solid body 1 and extends in opposite directions from the solid body 1 and through holes provided in guides or filling pieces 6, which are an integral part of said solid body 1. The shaft 3 extending through the holes in the guides 6 is provided with locking members, hereinafter called twist-locks, outside the guides, said twist-locks being integral with the shaft 3 and indicated on the drawing as an upper member 4 and a lower member 5. The solid body 1 is at 2 recessed from the outer end and towards the center where the turnable shaft 3 is journaled. An operating pin 9 or the like is affixed to the shaft 3 within the recess or aperture 2 and extends outwardly within the recess 2. Retention means in the form of spring clips 7, 8 are provided on the end surfaces of the solid body facing the recess 2 in order to retain the operating pin 9 and thus also the shaft 3 in one of the two end positions. A handle 10 or the like can be disengagably secured to the pin 9, as is shown with dotted lines on the drawing, said handle being used to assist the manual manipulation of the shaft 3. The twist-lock 5, which on the drawing is shown as the lower twist-lock is angularly displaced a small angle in relation to the twist-lock 4, which on the drawing is shown as the upper twist-lock, by reasons which will be indicated later.

When a coupling device according to the invention is to be used the lower twist-lock 5 on the drawing is turned by the pin 9 and the handle 10 into a position, wherein said twist-lock 5 is aligned with the lower guide or filling piece 6. In this position the lower twist-lock

5 and the guide 6 may be inserted in the elongate aperture of the corner casting of a container and then the shaft 3 can be turned back by the pin 9 and the handle 10 to the position shown on the drawing, wherein the lower twist-lock 5 is angularly displaced in relation to the elongate aperture of the corner casting and thus, the coupling device will be secured to the container. From the labour security point of view it is preferable to use the coupling device in an up-side down position, thus inserting the indicated lower twist-lock 5 and the guide 6 into a bottom corner casting of a lifted container since when the pin 9 has been turned back to the position shown on the drawing the coupling device will suspend from a container and hence, the hazardous work of climbing a stack of containers is eliminated. In said position, wherein the coupling device is secured to a container, the twist-lock 4, on the drawing being shown as the upper twist-lock, is aligned with the guide or filling piece 6 and when a container provided with coupling devices according to the invention is lowered upon an underlying container the twist-lock 4 and the guide 6 can be inserted into the upper corner casting of the underlying container. Then the pin 9 is turned by the disengagably mounted handle 10 to the left in the drawing into the other end position, wherein it will be engaged by and retained by the retention means 8. In this position the twist-lock 4, being the upper twist-lock on the drawing, is angularly displaced over the elongate aperture of the corner casting and hence, the two containers are clamped to each other. The above indicated angular displacement between the two remotely arranged twist-locks 4, 5 in relation to the same vertical plane is not restricted to a certain angle but can be determined according to circumstances between 10° and 80°, however, presently an angular displacement of about 30° is preferred. When in such a case the shaft 3 and the twist-lock 4 are turned 90° in relation to the position wherein the twist-lock 4 is aligned with the guide 6, the twist-lock 5, on the drawing shown as the lower twist-lock, will be displaced 60° in relation to the elongate aperture of the corner casting. This is an angle value which will guarantee positive and secure clamping.

When the cargo has arrived at the place of destination the containers are to be removed and released from each other. This can be done after that the pin 9 has been turned into the position shown on the drawing, in which position the upper twist-lock 4 is aligned with the guide 6. Then the container can be lifted and the guide 6 and twist-lock 4 can be removed from the aperture of the corner casting. The coupling device according to the invention is permitted to suspend from the container until the container has been lowered to the ground level, where a stevedore can turn the pin 9 by the handle 10 into the position, wherein the twist-lock 5, shown on the drawing as the lower twist-lock, is aligned with the guide 6, and in this position the coupling device according to the invention can be removed from the container. As can be seen from the drawing the twist-locks 4, 5 are dimensioned partly somewhat narrower and partly somewhat shorter than the guides 6 in order to safeguard against inadvertent retainment during unloading. Since the twist-locks 4, 5 are somewhat narrower than the guides 6 and hence also somewhat smaller than the elongate aperture of the corner casting, which substantially is conforming with the guides 6, unlocking will take place also if a small incor-

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rectness should occur in the orientation, e.g. by dirt or wearing, and hence, the risk for inadvertent retainment of the container in the beginning of the unloading operation is eliminated.

The twist-locks 4, 5 shown on the drawing can be of any preferred configuration, but on the drawing the lower twist-lock 5 is shown somewhat smaller than the twist-lock 4 due to weight and material saving reasons, due to which reasons also some apertures may be made in the solid body 1. The twist-lock 4 has preferably a somewhat conical configuration in order to facilitate the insertion thereof in the corner casting of the container during lowering of a container upon an underlying container. The body 1 of the coupling device may of course be provided with a gripping handle or the like in order to facilitate the handling thereof.

The coupling device according to the present invention can sustain the great stresses, which previously resulted in damage and collapse in connection with previously used devices. This is achieved by the fact that the coupling device according to the invention has a solid body 1 withstanding the stresses exerted by the containers. Due to the fact that the guides or filling pieces 6 are situated within the elongate apertures of the corner castings and the twist-locks 4, 5 are situated within the corner castings no force is exerted where the turning movement of the operating pin 9 is taken place. Due to this, the device according to the invention operates in a very secure way without any risk for damage or interruption of the operation.

The illustrated and described embodiment of the invention may be modified in many ways as is appreciated by the expert, said modifications being covered by this patent when they fall within the scope of the appended claims.

What we claim is:

1. In a manually operable vertical coupling device for disengageably securing a freight container to another container or to a loading platform, said coupling device being a separate unit which includes turnable twist-locks extending in opposite directions, said twist-locks in an initial position being insertable in elongated aper-

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tures in the corner castings of a container, the improvement comprising a non-compressible solid body, a through shaft turnably journaled in the center of said body, said shaft being integral with the twist-locks and manually actuatable between a non-clamping position and a clamping position for securing the containers and being capable of having a pin attached thereto, and a recess in said body extending from an outer end towards the center of said body and having a height equal to that of said body for permitting such pin to be connected to said shaft and to extend outwardly therefrom for manual actuation of the twist-locks between the non-clamping position and the clamping position and to indicate the position of the twist-locks in relation to the elongated aperture of the corner castings.

2. A coupling device according to claim 1 further comprising a pin connected to said shaft for manual actuation of the twist-locks.

3. A coupling device according to claim 1, wherein said recess is in the form of a cut-away portion.

4. A coupling device according to claim 1, wherein the twist-locks extending in opposite directions are mutually angularly displaced in relation to the same vertical plane.

5. A coupling device according to claim 4, wherein the relative angular displacement is to between 10° and 80°.

6. A coupling device according to claim 1, wherein the coupling device further comprises retention means to secure the pin connected to the shaft in the container clamping position and/or in the container non-clamping position.

7. A coupling device according to claim 6, wherein the retention means are spring clips mounted on the surfaces of the recess, said spring clips retaining the pin in locking position.

8. A coupling device according to claim 1, comprising a detachable operating handle mounted on the pin extending from the shaft in order to facilitate the manual operation of the twist-locks.

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