CONTAINER GUIDE

TECHNICAL FIELD

The invention relates to guides, which are used to align containers during loading onto vessels, more particularly to guides, which have means for extension.

BACKGROUND OF THE INVENTION AND PRIOR ART

Guides used to assist the loading of containers onto ships and tankers are well known. During loading, corners of the containers engage with the guides and are so positioned for accurate loading of the container onto a vessel. The guides are usually mounted on walls of the vessel's hold, extending vertically from the bottom of the hold to the surface of the deck.

Guides in some vessels extend further, protruding out of the hold. Some guides are fixed to a ship hull structure but are displaceable from the wall. Other the guides are fitted through oscillatable link members so that that they can freely protrude and retracted relative to their supports and flaps.

European Patent No. 0106070 relates to a guide unit for holding containers in the hold of a ship. The guide unit comprises of posts of fixed height which extend in a vertical direction through the hold and which are mounted displaceably on at least one guide rail. The guide rail extends through the hold. The posts can then be moved along the length of the ship in the hold.

All guides described above are of a fixed height and do not have any mechanism for retraction.

United States Patent No. 3,559,787 describes the use of a detachable

means for guiding standard containers as they are vertically lowered into or hoisted out from the cargo space of a ship. The detachable means comprise vertical guide means in the form of ropes or chains detachably connected, by winding up, to the deck and tensioned vertically throughout the height of the cargo space. The vertical guide means are for vertically guiding the containers when they are lowered into or hoisted from said cargo space. The vertical guide means are adapted to be removed by hoisting when the detachable means are not required.

SUMMARY OF THE INVENTION

It is an object of the invention to provide a guide, for containers, which retract as a container is loaded onto a vessel or at least provides the public or industry with a useful choice.

Accordingly in a first embodiment the present invention may be said to consist in a guiding system for loading containers into a vessel comprising:

a plurality of cell guides each said cell guide including,

a support mounted on a surface;

a guide element adapted to receive a corner of a container, said guide element slidably linked to said support;

biasing means connected to said guide element;

wherein when said biasing means is compressed the height of said guide is reduced and when said biasing means extends the height of each said cell guide increases.

Preferably the guide element is movably linked to the support by a first linker and a second linker wherein the second linker is engaged with said biasing means.

Preferably said biasing means is a spring.

Preferably said biasing means is an air spring.

Alternatively said biasing means is an hydraulic spring.

Preferably said plurality of cell guides is four.

The invention may further be said to consist in any alternative combination of parts or features mentioned herein or shown in the accompanying drawings. Known equivalents of these parts or features which are not expressly set out are nevertheless deemed to be included.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the invention will be described with reference to the drawings in which:

Figure 1 is a side view of cell guides in a hold of a vessel without a container;

Figure 2 is a plan view of cell guide ;

Figure 3 is a partial cross section side view of a vessel with containers in holds of said vessel;

Figure 4 is a side view of cell guides in a hold of a vessel as a container is loaded into said hold;

Figure 5 is a side view of cell guides in a hold of a vessel engaging a container as said container is loaded into said hold;

Figure 6 is a side view of cell guides in a hold of a vessel with a container abutting on guide elements of said cell guides as said container is loaded into said hold;

Figure 7 is a side view of cell guides in a hold of a vessel with a container resting on guide elements of said cell guides as said container is engaged with bottom stackers in said hold; and

Figure 8 is a plan view of a hold of a vessel showing the cell guides of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring to Figure 3 a vessel 60 including the cell guides 16 of the present invention is shown. Referring to Figure 1 a hold 10 of a vessel with cell guides 16 is shown. The hold 10 has a floor 12 and sidewalls 14. The cell guide 16 is composed of a support 18, a biasing means 20 and a guide element 22. A contains locking cone 24 is located on deck 12 proximal to each cell guide 16.

In the preferred embodiment support 18 is made of aluminum and is sized to support the weight of the cell guides. The support means 18 is mounted onto the deck surface 12. The biasing means 20 is bolted to the surface 12.

Biasing means 20 is connected around frame 18. The biasing means 20 is an air or gas hydraulic system for example Bansbach's easylift.

Guide element 22 includes a body 26, an angled portion 28 and a base plate 30. The body 26 of guide element 22 consists of two walls 36

which are joined along their lengths. To receive and maintain an edge of a container with ease the walls 36 of body 26 are joined at suitable angle. Such an angle will generally correspond to the angle of an edge of a container. A suitable angle is 90 degrees or slightly greater. Angled portion 28 projects from the top of the walls 36.

With reference to Figure 2, angled portions 28 are angled away from the side of the walls 36a, 36b to receive and to aid in positioning a container. Base plate 30 is attached to the bottom of the walls 36. Base plate 30 has an aperture 30a to receive cone 24 when guide element 22 is lowered to floor 12.

The guide element 22 is linked to the support 18 by a first linker 32 and a second linker 34 which provide the guide element 22 with sufficient support to remain vertically aligned with the support 18. The linkage by the first linker 32 and the second linker 34 allow for the guide element 22 to move lengthwise along the support 18. The second linker 34 rests on the biasing means 20. The biasing means 20 maintains the guide element 22 in a biased positioned along the support 18. Therefore, the length of biasing means 20 determines the vertical displacement of the guide element 22 from floor 12. If biasing means 20 is compressed by a downward force, its length is reduced resulting in guide element 22 being lower to floor 12. Cell guides 16 are at their greatest displacement from floor 12 when there is no container 38 and the biasing means 20 are full extended.

With reference to Figure 4, a container 38 with feet 40 and side edges 42 is aligned for loading into hold 10. The apparatus for loading containers are not shown in the drawings. It is known that cranes of various types are generally used for loading of containers. For the purposes of this description it is to be taken that the containers being

loaded into the vessel 6 are loaded using such cranes. In a preferred embodiment four cell guides 16 are located on floor 12 to correspond to the four corners of container 38. The four cell guides 16 can be seen in Figure 8, which shows a plan view of a vessels deck.

Figure 5 shows the container 38 being positioned into hold 10 by guide elements 22. As the container 38 is lowered, each foot 40 contacts and engages with a angled portion 28 of each guide element 22. The angled portion 28 provides a greater surface for legs 40 to contact than would be possible with just the top edge of wall 36. As each leg 40 contacts each angled portion 28, legs 40 are lead into the inside of walls 36 of body 26 by slanted portion 28. As container 38 is lowered downwards each side corner slides into inside of corresponding walls 36a, 36b of each cell guide 22 which results in the container 38 being positioned accurately for loading into hold 40.

With reference to Figure 6, as container 38 is lowered between walls 36, feet 40 contact and abut upon base plates 30 of guide elements 22. When feet 40 abut base plates 30, the weight of container 38 acts on the base plate 30. The downward force generated by the weight of container 38 is sufficiently large to compress the biasing means 20 as linker 34 forces down on the biasing means. Each guide element 22 then moves along support 18 towards floor 12.

The container 38 and guide elements 22 continue to move towards floor 12 till base plates 30 come to rest on cone 24 as shown in Figure 7. Each cone 24 protrudes through apertures in each base plate 30 to engage with each foot 40. The base plate 30 sits over the cone 24. Container 38 is completely in hold 10 and the top edges of slanted portions 28 are in line with the top edges of walls 14. The top surface of container 38 is flushed with the surface of a deck of a vessel as shown in Figure 7. Cell guides 16

may be locked in position with the base plate 30 abutting cone 24. The base plate 30 sits on the cone 24.

To remove container 38 from hold 10, the container 38 is simply lifted out by a crane, guided by guide elements 22. If Cell guides 16 are locked in a lowered position, guide elements 22 will guide container up to the deck of a vessel. If cell guides 16 are not locked in place the guide elements 22 will move upwards away from floor 12 along support 18 as the container 38 is lifted. The crane takes up the downward force due to the weight of container 38. Guide elements 22 will continue to move upward and protrude out of hold 10 as a result of the spring force of biasing means 20 up to the maximum extension of biasing means 20.

A hatch cover may be provided to cover hold 10 after the container 38 has been lowered into or after container 38 has been lifted out, with cell guides 16 locked in the lowered position, of hold 10.

The foregoing describes the invention with reference to the disclosed embodiment. Alterations and modifications as will be obvious to those skilled in the art are intended to be incorporated within the scope of the invention as defined in the accompanying claims.

CLAIMS

1. A guiding system for loading containers into a vessel comprising:
   a plurality of cell guides each said cell guide including,
   a support mounted on a surface;
   a guide element adapted to receive a corner of a container, said guide element slidably linked to said support;
   biasing means connected to said guide element;
   wherein when said biasing means is compressed the height of said guide is reduced and when said biasing means extends the height of said cell guide increases.

2. A guiding system for loading containers into a vessel as claimed in claim 1 wherein said guide element is slidably linked to said support by a first linker and a second linker, said second linker engaged with said biasing means.

3. A guiding system for loading containers into a vessel as claimed in claim 1 or claim 2 wherein the guide element include walls angled to correspond to a corner of a container and a base attached to said walls.

4. A guiding system for loading containers into a vessel as claimed in any one of claims 1 to 3 wherein said biasing means is a spring.

5. A guiding system for loading containers into a vessel as claimed in any one of claims 1 to 3 wherein said biasing means is an air spring.

6. A guiding system for loading containers into a vessel as claimed in any one of claims 1 to 3 wherein said biasing means is an hydraulic spring.

7. A guiding system for loading containers into a vessel as claimed in any one of claims 1 to 6 wherein said plurality of cell guides is four.