LASHING SYSTEM AND METHOD

FOR USE IN CARGO SHIPS

BACKGROUND

[0001] This disclosure relates generally to methods and systems for securing shipping containers on a cargo ship. This disclosure relates more particularly to methods and systems for lashing shipping containers that can either supplement or replace the lashing systems usually used on cargo ships.

[0002] Cargo ships can accidentally lose large numbers of shipping containers at sea while sailing through heavy seas. As ships become bigger and shipping containers are stacked higher, the customary lashing system design which has been used for many years cannot provide an acceptable level of restraint. The movement of the upper containers that is caused by the ship's pitch and roll under the influence of waves increases. This movement can destabilize the shipping containers because of the higher acceleration levels of the upper containers.

SUMMARY

[0003] The disclosure describes a method of stabilizing shipping containers stored on a cargo ship.

[0003a] According to a first aspect of the present invention, there is provided a method of stabilizing shipping containers stored on a cargo ship, comprising: providing a lashing apparatus including a support capable of interfacing with an interlocking system of one or more shipping containers, and a lashing; securing the support to one or more shipping containers; coupling the lashing to the support; and connecting an end of the lashing to another shipping container or to a structure of the cargo ship.

[0003b] According to a second aspect of the present invention, there is provided a lashing apparatus for use on cargo ships transporting shipping containers, comprising: a support capable of interfacing with an interlocking system of one or more shipping containers; and a lashing couplable to the support and having an end connectable to another shipping container or to a structure of the cargo ship.

[0003c] According to a third aspect of the present invention, there is provided a method of stabilizing shipping containers stored on a cargo ship, wherein all the shipping containers are located between a first wall of shipping containers stacked at one of a starboard side and a port side of the cargo ship and a second wall of shipping containers stacked at the other of the starboard side and the port side of the cargo ship, the method comprising: providing a first lashing apparatus including a first support capable of interfacing with a first interlocking system of one or more shipping containers, a first lashing, and first means for wrapping the first lashing that are mounted on the first support; securing the first support to the first wall; coupling the first lashing to the first support; wrapping or unwrapping the first lashing to the first means for wrapping the first lashing; connecting an end of the first lashing to a lashing bridge or a deck of the cargo ship so that the first lashing is oriented from the first wall downward and toward the second wall; providing a second lashing apparatus including a second support capable of interfacing with a second interlocking system of one or more shipping containers, and a second lashing; securing the second support to the second wall; coupling the second lashing to the second support; connecting an end of the second lashing to the lashing bridge or the deck of the cargo ship so that the second lashing is oriented from the second wall downward and toward the first wall; and applying tension to the first lashing and to the second lashing.

[0004] The method may comprise the step of providing a lashing apparatus that includes a support capable of interfacing with an interlocking system of one or more shipping containers, and a lashing. The lashing apparatus may further include a foundation, a first releasable connector mounted on the foundation, and a second releasable connector included at the end of the lashing and adapted to be releasably coupled to the first releasable connector. For example, the second releasable connector includes an eye and shackle assembly or a turnbuckle. The lashing apparatus may further comprise an accelerometer coupled to the support or a load pin coupled to the foundation and capable of measuring tension in the lashing. The accelerometer or the load pin may be wirelessly connected to a computer. The computer may be programmed to drive a winch. In some embodiments, the lashing apparatus may include a ratcheting track and a pawl configured to slide on the ratcheting track. Also, the end of the lashing may include a turnbuckle. In some embodiments, the lashing apparatus may include means for wrapping the lashing that are mounted on the support. For example, the means for wrapping the lashing comprise a winch, a bollard attached to a pin, a fairlead attached to a pin,

What is claimed is:

1. A method of stabilizing shipping containers stored on a cargo ship, comprising:

providing a lashing apparatus including a support capable of interfacing with an interlocking system of one or more shipping containers, and a lashing;

securing the support to one or more shipping containers;

coupling the lashing to the support; and

connecting an end of the lashing to another shipping container or to a structure of the cargo ship.

2. The method of claim 1, further comprising applying tension to the lashing such as to reduce movement of the support.

3. The method of claim 1,

wherein the lashing apparatus further includes a foundation, a first releasable connector mounted on the foundation, and a second releasable connector included at the end of the lashing and adapted to be releasably coupled to the first releasable connector;

wherein connecting the end of the lashing to the other shipping container or to the structure of the cargo ship comprises coupling the first releasable connector to the second releasable connector; and

the method further comprising securing the foundation to at least one of a lashing bridge, a lashing tie-rod, or a deck of the cargo ship.

4. The method of claim 1,

wherein the lashing apparatus includes a ratcheting track and a pawl configured to slide on the ratcheting track;

the method further comprising securing the ratcheting track to at least one of the support, a lashing bridge or a deck of the cargo ship; and

wherein applying tension to the lashing comprises adjusting a position of the pawl along the ratcheting track.

5. The method of claim 4,

wherein the end of the lashing includes a turnbuckle; and

wherein applying tension to the lashing further comprises adjusting a length of the turnbuckle.

6. The method of claim 4,

wherein adjusting the position of the pawl is performed with a winch coupled to the ratcheting track.

7. The method of claim 4, wherein securing the ratcheting track to the at least one of the support, a lashing bridge, a lashing tie-rod, or a deck of the cargo ship comprises releasably attaching the ratcheting track to container connectors provided on a hatch cover.

8. The method of claim 1,

wherein the lashing apparatus includes means for wrapping the lashing that are mounted on the support;

the method further comprising wrapping or unwrapping the lashing to the means ~~of~~ for wrapping the lashing.

9. The method of claim 8, wherein the means for wrapping the lashing comprise a winch, a bollard attached to a pin, a fairlead attached to a pin, or a combination thereof.

10. The method of claim 9, further comprising adjusting a position of at least one of the means for wrapping the lashing.

11. The method of claim 3, wherein the second releasable connector includes an eye and shackle assembly or a turnbuckle.

12. The method of claim 1 or 3, wherein the lashing apparatus further comprises an accelerometer coupled to the support or a load pin coupled to the foundation and capable of measuring tension in the lashing.

13. The method of claim 12, wherein the accelerometer or the load pin is wirelessly connected to a computer.

14. The method of claim 1, comprising:

further providing one or more lashing apparatus, each including a support capable of interfacing with an interlocking system of one or more shipping containers, and a lashing.

~~15. The method of claim 14, further comprising lifting a lashing cage to transport an operator to the support of at least one apparatus, and connecting the lashing cage to the support, the lashing cage comprising:~~

~~a lower level having a handrail, the lower level being at least partially floorless; and~~

~~an upper level having a handrail, the upper level having a floor, the lower level being accessible by the operator from the upper level.~~

~~16~~15. The method of claim 1, further comprising placing one or more shipping containers on top of the support.

~~17~~16. A lashing apparatus for use on cargo ships transporting shipping containers, comprising:

a support capable of interfacing with an interlocking system of one or more shipping containers; and

a lashing couplable to the support and having an end connectable to another shipping container or to a structure of the cargo ship.

~~18~~17. The lashing apparatus of claim ~~17~~16, further comprising:

a tensioner capable of applying tension to the lashing such as to reduce movement of the support.

~~19~~18. The lashing apparatus of claim ~~17~~16, further comprising:

a foundation adapted to be secured to at least one of a lashing bridge, a lashing tie-rod, or a deck of the cargo ship;

a first releasable connector mounted on the foundation; and

a second releasable connector included at the end of the lashing and adapted to be releasably coupled to the first releasable connector.

~~20~~19. The lashing apparatus of claim ~~17~~16, comprising:

a ratcheting track adapted to be secured to at least one of the support, a lashing bridge or a deck of the cargo ship; and

a pawl configured to slide on the ratcheting track,

wherein a position of the pawl along the ratcheting track is adjustable.

~~21~~20. The lashing apparatus of claim ~~20~~19, wherein the end of the lashing includes a turnbuckle that has an adjustable length.

~~22~~21. The lashing apparatus of claim ~~20~~19, further comprising a winch coupled to the ratcheting track, wherein the winch is configured to adjust the position of the pawl.

~~23~~22. The lashing apparatus of claim ~~17~~16, comprising means for wrapping the lashing that are mounted on the support.

~~24~~23. The lashing apparatus of claim ~~23~~22, wherein the means for wrapping the lashing comprise one or more of a winch, a bollard attached to a pin, and a fairlead attached to a pin.

~~25~~24. The lashing apparatus of claim ~~23~~22, wherein a position of at least one of the means for wrapping the lashing mounted on the support is adjustable.

~~26~~25. The lashing apparatus of claim ~~25~~24, wherein the support includes a plurality of sockets, each sized to receive a pin attached to a bollard or a pin attached to a fairlead.

~~27~~26. The lashing apparatus of claim ~~19~~18, wherein the second releasable connector included at the end of the lashing comprises an eye and shackle assembly or a turnbuckle.

~~28~~27. The lashing apparatus of claim 17 or 18, further comprising an accelerometer coupled to the support or a load pin coupled to the foundation and capable of measuring tension in the lashing.

~~29~~28. The lashing apparatus of claim ~~28~~27, wherein the accelerometer or the load pin is wirelessly connected to a computer.

~~30~~29. The lashing apparatus of claim ~~29~~28, wherein the computer is programmed to drive a winch to automatically adjust the tension of the lashing attached to the winch based on data received from the accelerometer or the load pin.

30. A method of stabilizing shipping containers stored on a cargo ship, wherein all the shipping containers are located between a first wall of shipping containers stacked at one of a starboard side and a port side of the cargo ship and a second wall of shipping containers stacked at the other of the starboard side and the port side of the cargo ship, the method comprising:

providing a first lashing apparatus including a first support capable of interfacing with a first interlocking system of one or more shipping containers, a first lashing, and first means for wrapping the first lashing that are mounted on the first support;

securing the first support to the first wall;

coupling the first lashing to the first support;

wrapping or unwrapping the first lashing to the first means for wrapping the first lashing;

connecting an end of the first lashing to a lashing bridge or a deck of the cargo ship so that the first lashing is oriented from the first wall downward and toward the second wall;

providing a second lashing apparatus including a second support capable of interfacing with a second interlocking system of one or more shipping containers, and a second lashing;

securing the second support to the second wall;

coupling the second lashing to the second support;

connecting an end of the second lashing to the lashing bridge or the deck of the cargo ship so that the second lashing is oriented from the second wall downward and toward the first wall; and applying tension to the first lashing and to the second lashing.

31. The method of claim 30, wherein the first support is secured on a top of the first wall.

32. The method of claim 31, wherein the second support is secured on a top of the second wall.

33. The method of claim 30,

wherein the end of the first lashing is connected to the lashing bridge or the deck of the cargo ship at a first location proximate to the middle of the cargo ship, and

wherein the end of the second lashing is connected to the lashing bridge or the deck of the cargo ship at a second location proximate to the middle of the cargo ship.

34. The method of claim 30, further comprising:

positioning spacers or bumpers between columns of shipping containers so as to pre-load a layer of containers from opposing sides when tension is applied to the first lashing and the second lashing.

35. The method of claim 1, further comprising:

coupling a third lashing to the first support;

connecting an end of the third lashing to another container located in the second wall; and applying tension to the third lashing.

36. The method of claim 35, wherein the another container is located on a top of the second wall.