March 3, 1970 E. T. SOMMER 3,498,477

APPARATUS FOR HANDLING AND STOWING CARGO ON A CARGO VESSEL

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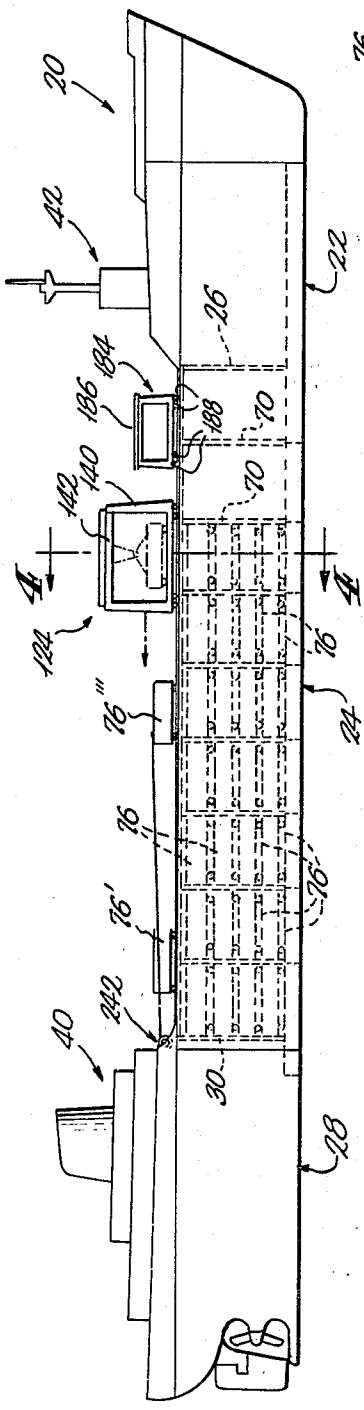


Fig. 1.

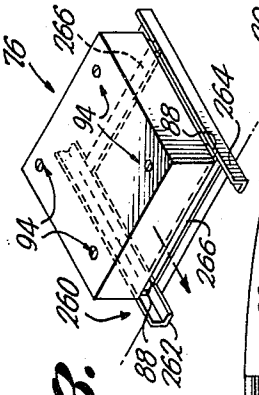


Fig. 3.

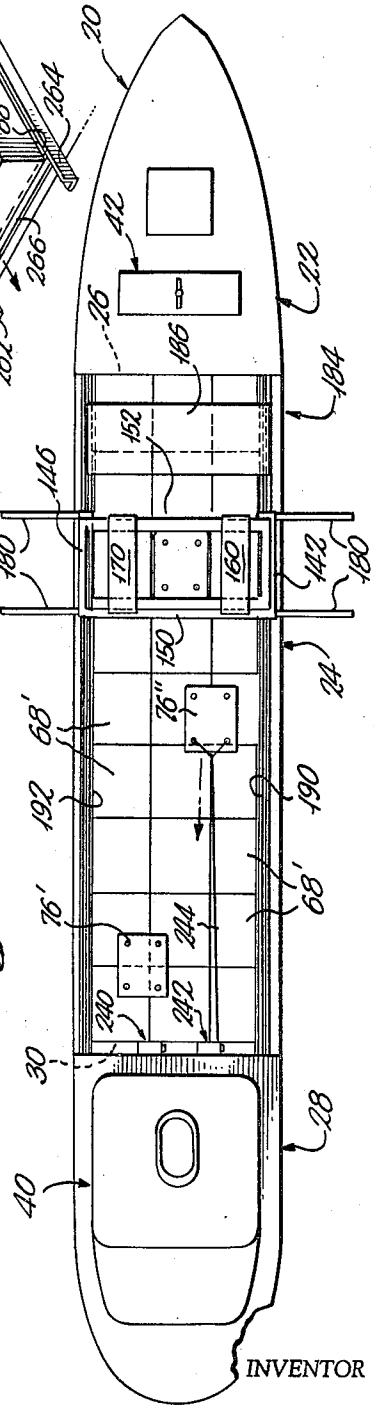


Fig. 2.

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Fig. 5.

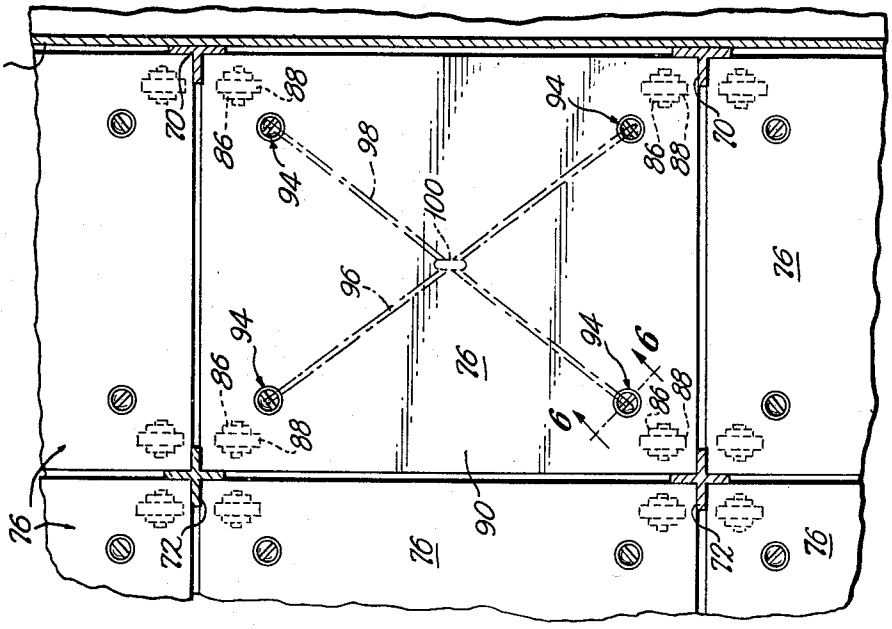


Fig. 4.

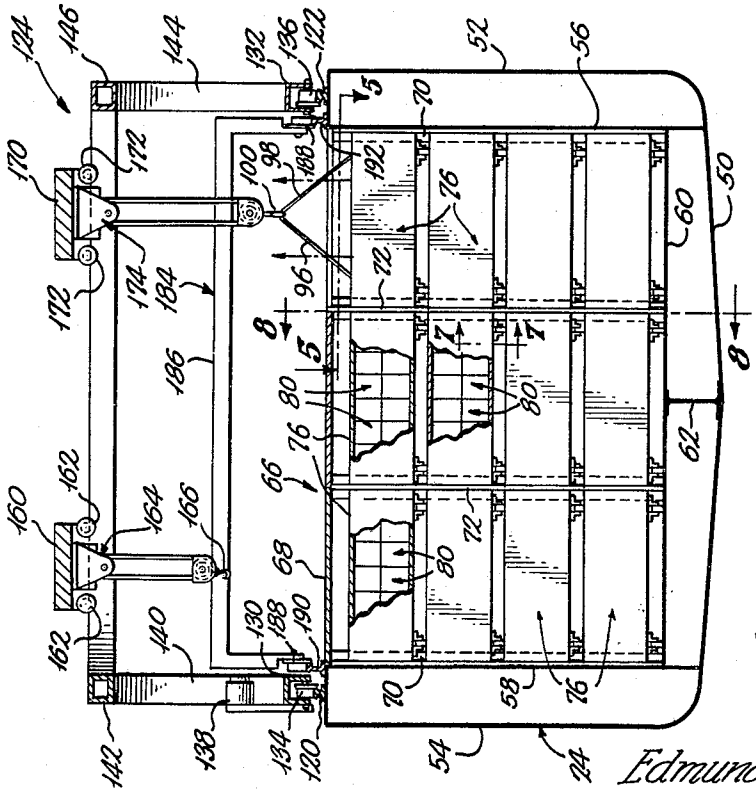
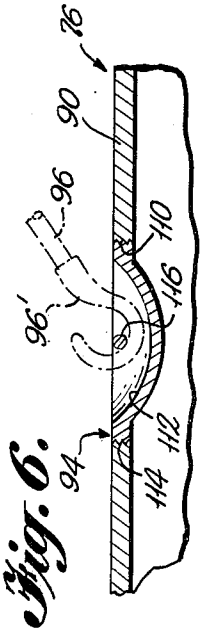


Fig. 6.



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Fig. 7.

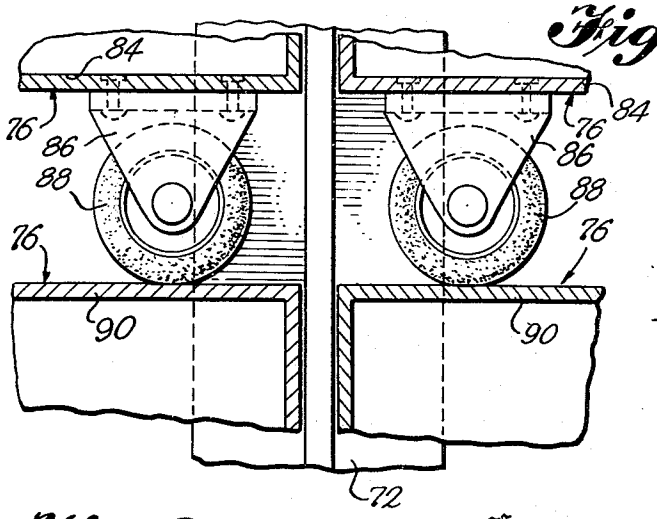


Fig. 9.

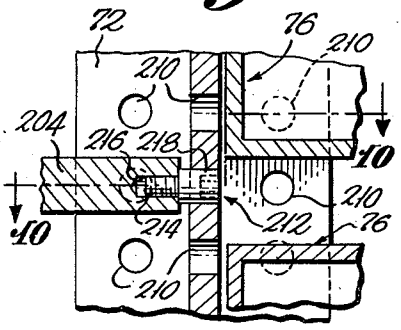


Fig. 8.

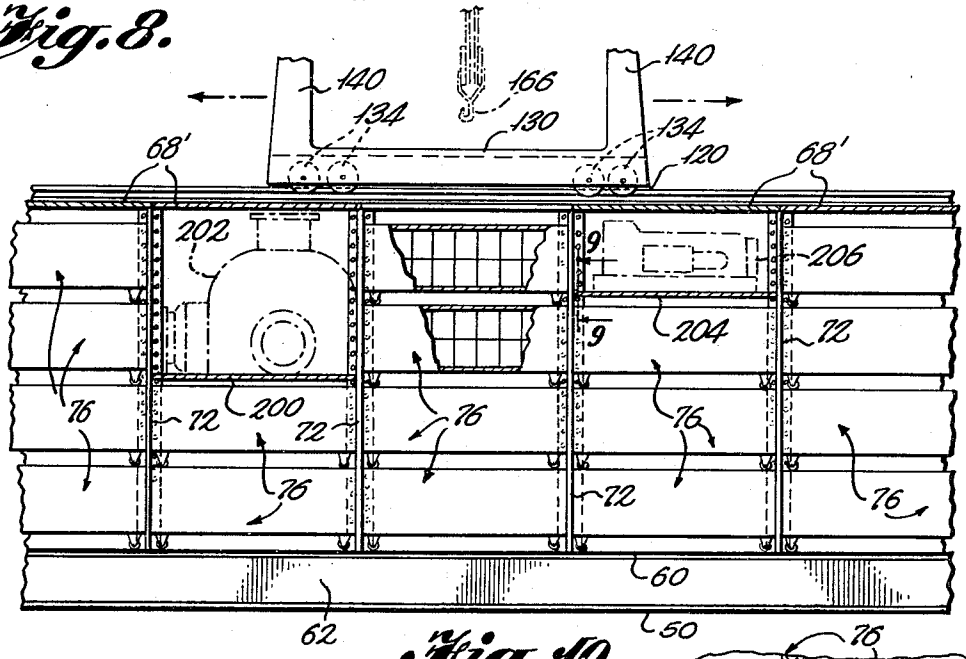


Fig. 10.

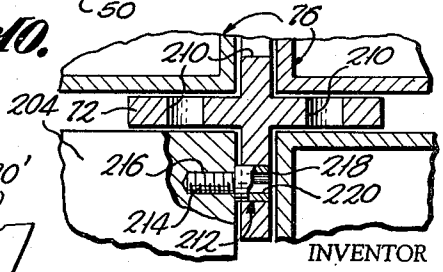
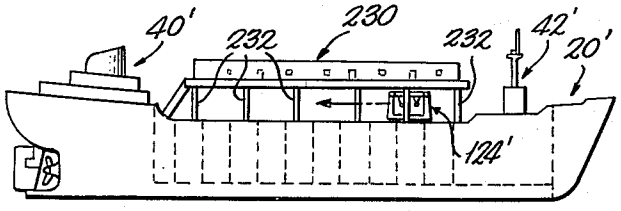


Fig. 11.



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Fig. 12.

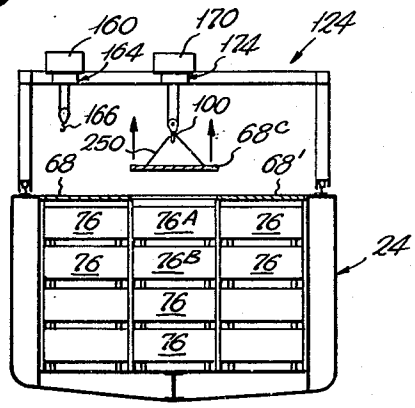


Fig. 13.

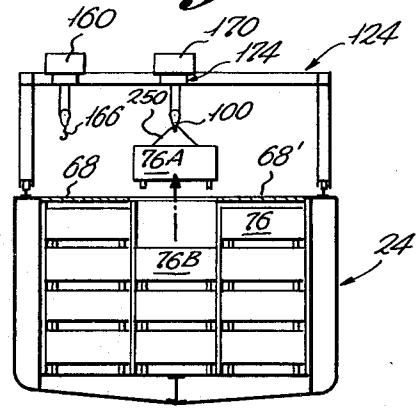


Fig. 14.

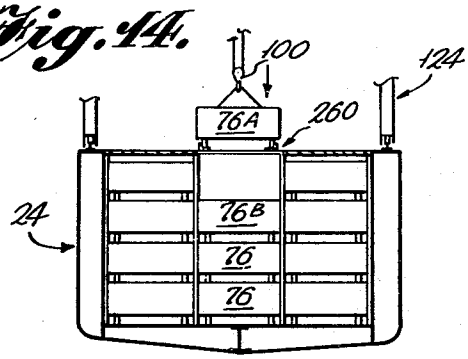


Fig. 15.

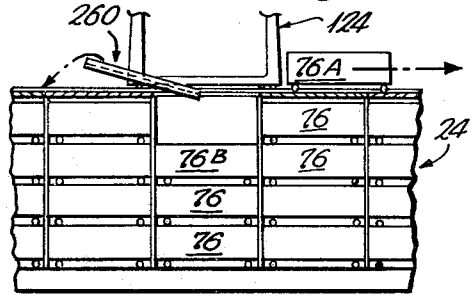


Fig. 16

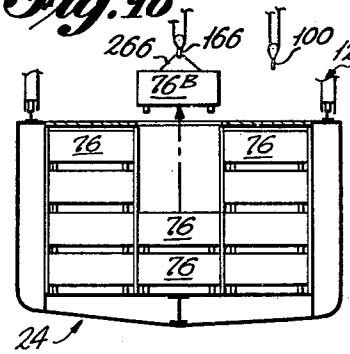


Fig. 17.

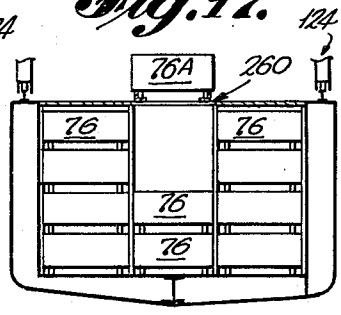
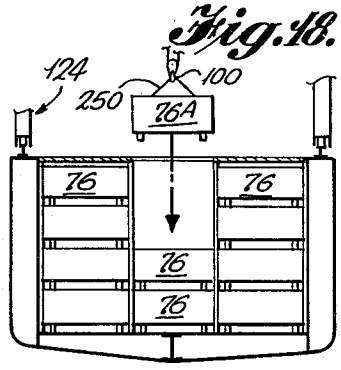


Fig. 18.



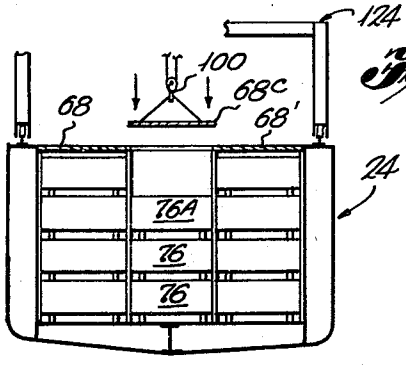


Fig. 19.

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United States Patent Office 3,498,477
Patented Mar. 3, 1970

3,498,477

APPARATUS FOR HANDLING AND STOWING CARGO ON A CARGO VESSEL

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Filed Nov. 21, 1967, Ser. No. 684,738
Int. Cl. B63b 27/10, 9/12, 29/00
U.S. Cl. 214—15 9 Claims

ABSTRACT OF THE DISCLOSURE

A cargo vessel includes a plurality of spaced guide means defining individual cargo cells each of which has a separate hatch thereover. Crane means movable along the upper portion of the vessel is disposed in spanning relationship to the cargo hold area within which said cargo cells are disposed and includes pick-up hoists for moving cargo into and out of the cells. A bridge deck means is also movable along the upper portion of the vessel and is movable through the crane means. Movable platforms may be supported in certain cells in desired vertical relationship therewithin. Containers having wheel means thereon and means for engaging the crane means may be disposed within certain of the cells. Passenger accommodation means is provided in overlying spaced relation to the cargo cells.

BACKGROUND OF THE INVENTION

The present invention relates to a cargo vessel arrangement which enables the vessel to handle break bulk general cargo, unitized general cargo such as pallets, containers, vehicles and the like, and which at the same time incorporates a substantial amount of passenger carrying accommodations.

So-called container ships have been provided in the prior art which are adapted to receive containers of one type or another, this concept of placing the cargo in containers now being quite prevalent. Prior art container ships have employed fixed decks with spaced hatches which present serious problems in removing the containers out of the wings in the various decks and particularly from the lower decks when the hatches are filled with containers.

U.S. Patent No. 2,985,131 discloses a container ship wherein a plurality of spaces are provided therein for receiving containers which are adapted to be stacked one upon another. This type of arrangement is adequate when nothing but containers are to be shipped, but is not satisfactory where it is also desired to ship break bulk cargo as well as containers. In those cases wherein fixed decks are provided, which of course is suitable for stowing break bulk cargo, limited stowage is provided since the height between the fixed decks may not be practical for stowing certain types of break bulk cargo.

In prior art container ships and the like, the upper deck thereof is not flush, but as for example shown in the aforementioned U.S. patent, the various hatch covers are spaced from one another so as to present a number of gaps or spaces along the upper deck of the ship which makes it difficult to maneuver and move cargo thereabout. It is evident that any interrupted portions of the deck or projecting parts will substantially interfere with free movement of cargo about the deck.

A further disadvantage of conventional container ships and the like is the fact that they do not provide any substantial amount of passenger accommodations, and accordingly the use of the ship is quite limited.

A further disadvantage of prior art container ships and the like is the fact that stevedores are usually required for handling the containers both above and below decks. In many cases, it is necessary to clear the deck at the first port where it is desired to unload whenever a portion of the cargo has been stowed on deck. The so-called overstowage problem involved in prior art ships presents a real disadvantage to such arrangements. When it is necessary to load and discharge many different cargoes at many different ports on a single voyage, it is often very difficult to gain access to any particular portion of the cargo on an individual cargo deck or an individual cargo frame. This overstowage problem results in substantial losses in time in loading and unloading ships.

Such prior art vessel arrangements also have a limited amount of deck space for stowage thereon and accordingly there is often inadequate space available for stowing cargo on the deck particularly during loading and unloading operations.

A further disadvantage of the prior art container ships is that the containers employed therewith are not readily handled or of such a construction so as to permit easy maneuvering thereof along the deck or within the cargo holds.

SUMMARY OF THE INVENTION

The present invention provides a novel arrangement wherein guide means are disposed in spaced relationship within the cargo hold area of the vessel and define a plurality of cargo cells. An individual hatch is provided for each of these cells whereby access may readily be obtained to each particular cell without interfering with adjacent cells.

The structure of the present invention is especially adapted to permit shipping of containers as well as break bulk cargo. The break bulk cargo is effectively handled by providing movable cargo support means in the form of platforms within one or more of the cells of the vessel, and further providing selectively operable holding means for holding the movable cargo support means in any desired operative position depending on the type of break bulk cargo to be supported thereby. This enables the amount of vertical stowage space in any particular cell to be readily adjusted.

The upper deck means of the present invention includes a plurality of hatches defining a substantially flush deck. By having a flush upper deck, stowage and movement of cargo on and along this upper deck is quite feasible. Accordingly, the upper deck of the present invention is especially suited for stowage and handling of cargo.

The present invention additionally provides an arrangement wherein passenger accommodation means is disposed in overlying spaced relationship to the cargo cells thereof. This enables a relatively large number of passengers to be accommodated without seriously interferring with the cargo carrying capacity of the vessel, nor the cargo handling efficiency thereof. Accordingly, a vessel is provided which below decks is principally a cargo carrying vessel and with a superstructure which is a passenger accommodation means and extended over and above the cargo cells to provide protection therefor from the elements and so forth.

The arrangement of the present invention enables cargo to be handled with a minimum of stevedoring and substantially eliminates the overstorage problem encountered in the prior art since it is possible to readily gain access to any particular portion of the cargo. This enables economic handling of the cargo and substantially reduces the amount of time required in either loading or unloading the vessel. Additionally, with the arrangement of the present invention cargo can be handled at many positions along the deck of the vessel due to the fact that various individual hatches may be removed from certain cells and further since movable cargo transfer means in the form of crane means is mounted for movement along the upper portion of the vessel.

The present invention also includes an auxiliary bridge deck means disposed in spanning relationship to the cargo cells and movable along the upper portion of the vessel. This auxiliary bridge deck means includes an upper supporting surface adapted to receive cargo thereon whereby additional auxiliary stowage space is provided.

The containers employed in the present invention are also of novel construction and include lift fittings which enables them to be readily lifted, and also include wheels thereon whereby the containers may be easily moved along the deck of the vessel when so desired.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view of a cargo vessel according to the present invention;

FIG. 2 is a top view of the vessel shown in FIG. 1;

FIG. 3 is a top perspective view on an enlarged scale illustrating the manner in which a container is disposed upon a support means when carrying out the method of the present invention;

FIG. 4 is a sectional view of an enlarged scale taken substantially along line **4—4** of FIG. 1 looking in the direction of the arrows;

FIG. 5 is a sectional view on an enlarged scale taken substantially along line **5—5** of FIG. 4 looking in the direction of the arrows;

FIG. 6 is a sectional view on an enlarged scale taken substantially along line **6—6** of FIG. 5 looking in the direction of the arrows;

FIG. 7 is a sectional view on an enlarged scale taken substantially along line **7—7** of FIG. 4 looking in the direction of the arrows;

FIG. 8 is a sectional view on an enlarged scale taken substantially along line **8—8** of FIG. 4 looking in the direction of the arrows;

FIG. 9 is a sectional view on an enlarged scale taken substantially along line **9—9** of FIG. 8 looking in the direction of the arrows;

FIG. 10 is a sectional view taken substantially along line **10—10** of FIG. 9 looking in the direction of the arrows;

FIG. 11 is a side view of a vessel according to the present invention incorporating passenger accommodation means; and

FIGS. 12–19 illustrate successive steps involved in the method of unloading the cargo vessel according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings wherein like reference characters designate corresponding parts throughout the several views, the cargo vessel of the present invention is indicated generally in FIGS. 1 and 2 by reference numeral **20**. The vessel includes a forebody portion **22** and a middle body portion **24**, these two portions being separated interiorly thereof by a transverse bulkhead **26**. The vessel also includes an afterbody portion **28** separated interiorly from the middle body portion by a transverse bulkhead **30**.

A deckhouse superstructure **40** is supported on the afterbody portion **28**, and a navigation bridge superstructure **42** is supported by the forebody portion **22**.

As seen most clearly in FIG. 4, the hull of the ship is formed by an outer bottom **50** which joins with sides **52** and **54** disposed substantially parallel with one another. Longitudinally extending bulkheads **56** and **58** are disposed inwardly of and substantially parallel with the sides **52** and **54** respectively. An inner bottom **60** is spaced from the outer bottom **50** and a vertical keel **62** extends longitudinally of the ship between the two bottoms **50** and **60**.

The upper deck means is indicated generally by reference numeral **66** and includes a plurality of similar hatch covers one of which is numbered **68** in this view, these hatch covers being disposed adjacent one another and cooperating to define a substantially flush deck.

Referring to FIG. 3, it will be noted that a plurality of hatch covers **68'** similar to hatch covers **68** are provided, these various hatch covers cooperating to define a flush deck means disposed over the cargo hold area defined in the middle body portion **24** of the vessel between the transversely extending bulkheads **26** and **30**.

Referring now to FIG. 5, a first plurality of spaced guide means **70** are provided, these guide means being of substantially T-shaped cross sectional configuration and being fixedly secured in vertically extending relationship along the inwardly facing surface of the longitudinal bulkhead **56**. Similar guide means are secured to the opposite longitudinally extending bulkhead **58**.

The guide means also includes a plurality of spaced intermediate guide members **72** which have a substantially X-shaped cross sectional configuration as seen in FIG. 5. These various guide members are fixedly secured at the lower end thereof to the inner bottom **60**, and the upper ends thereof may be interconnected with one another if desired by suitable cross brace members of similar thickness.

It will be noted that the various guide members define individual rectangular cells which are adapted to slidably receive containers each of which is indicated by reference numeral **76** in FIG. 5. These containers have a size so that the corners thereof are adapted to fit within the corners defined by the spaced guide means so that the containers will be adapted to slide vertically within the individual associated cells, but are not permitted to shift fore and aft of the ship or athwartships.

The entire cargo hold area is provided with vertically extending spaced guide means so arranged that four adjacent guide means as for example seen in FIG. 5 define individual cells whereby the entire cargo hold area is divided into a plurality of cells so that the ship may be said to have a cellular construction. In addition, a separate individual hatch cover **68** is disposed over each of the individual cells whereby access may be gained to any particular cell and the cargo disposed therewithin.

As seen in FIG. 4, a plurality of containers **76** are adapted to be stacked one on top of another, and as illustrated, there are four containers disposed within each of the cells in a tiered arrangement. Each of the containers **76** is of hollow rectangular configuration and is adapted to have suitable cargo indicated by reference numeral **80** disposed therewithin.

Referring particularly to FIG. 7, each of the containers **76** includes a bottom wall **84** having four spaced brackets **86** secured thereto adjacent the four lower corners thereof and extending downwardly therefrom, these brackets serving to support wheels **88** which may be rubber tired wheels, these wheels being rotatably supported by the brackets so that each container is mounted on four spaced rubber tired wheels whereby it may be readily maneuvered along a suitable supporting surface such as the flush deck of the ship. These wheels may also be mounted on caster type support brackets if so desired. It will be noted that the wheels of one container are adapted to rest upon the upper wall **90** of an adjacent container.

Referring now to FIG. 5, the upper wall **90** of each of the containers **76** is provided with four spaced lifting fittings indicated generally by reference numeral **94**, these fittings being adapted for attachment to cable means **96** and **98** as indicated in phantom lines which form a lifting sling adapted to be interconnected with a hook **100** of a hoist means hereinafter described.

Referring now to FIG. 6, the top wall **90** of container **76** is provided with a plurality of threaded holes **110** one of which is illustrated in this figure. The fitting **94** includes a dish-shaped central portion **112**, and has external threads **114** formed thereon which are adapted to thread into the threads formed in the top wall **90** of the container for securing the fitting in position. A cross

bar **116** of the fitting extends diametrically between opposite sides of the fitting in spaced relationship from the dish portion **112** whereby the portion **116** is adapted to be connected with a hook **96'** indicated in phantom lines disposed at the end of cable **96** previously described.

Referring again to FIG. 4 of the drawings, a pair of longitudinally extending rails **120** and **122** are provided adjacent opposite sides of the vessel and extend substantially throughout the length of the middle body portion of the vessel. Cargo transfer means in the form of a rolling gantry bridge crane **124** is mounted for rolling movement along the rails **120** and **122**.

This crane means is of relatively conventional construction and includes opposite lower side members **130** and **132** having railway type wheels **134** and **136** journalled therein respectively for rotation, these wheels engaging the tracks **120** and **122** so that the crane means is guided in its movement fore and aft of the ship. An electric drive motor **138** is indicated as being drivingly interconnected with the wheels **134** for providing the powered drive for the crane means.

A pair of upright support members **140** extend vertically upwardly from opposite ends of the lower side members **130** and are rigidly interconnected with an upper side member **142**. A similar pair of veritcal upright support members **144** are interconnected with opposite ends of the lower side member **132**, and an upper side member **146** is connected at its opposite ends to the upper ends of support members **144**.

A pair of cross members **150** and **152** as seen most clearly in FIG. 2 have the opposite ends thereof rigidly secured to side members **142** and **146** respectively for providing a rigid framework.

As seen in FIG. 4, a first trolley member **160** is supported upon a plurality of wheels **162** which are movable along the cross members **150** and **152**. A pick-up hoist or winch **164** is supported by trolley member **160**, and a hook member **166** is disposed at the lower portion of the hoist. A similar trolley member **170** is supported upon wheels **172** which also move along the cross members **150** and **152**. A pick-up hoist or winch **174** is supported by trolley member **170**, and the hook **100** previously described is mounted at the lower portion of the hoist.

As seen in FIG. 2, the crane means may be provided with folding jib extensions **180** which extend outboard of the ship to facilitate on and off loading of cargo with respect to a dock and the like.

It will be apparent from the foregoing that a movable crane means is provided which is disposed in spanning relationship to the cargo hold area of the ship, and that by moving the crane means fore and aft, and also by moving the trolley members **160** and **170** athwarthships, the pick-up hoists may be disposed over any suitable cargo cell as desired.

Referring to FIGS. 1 and 2, a cargo handling bridge deck means is indicated generally by reference numeral **184** and is of such a construction so as to provide an upper support surface **186** upon which containers or other cargo may be stored as required. This bridge deck means is of a smaller dimension than the aforementioned crane means so that it can actually pass through the crane means and is movable fore and aft of the crane means and with respect thereto.

The bridge deck means is mounted upon a plurality of wheels **188** rotatably supported at opposite sides thereof, these wheels being of the railway type and adapted for movement along tracks **190** and **192** as seen in FIG. 4 which are disposed inboard of the tracks **120** and **122** respectively previously described. It is apparent that with this arrangement, the bridge deck means may be moved under the crane means and cargo may be deposited upon the upper supporting surface **186** of the bridge deck means by the pick-up hoists of the crane means. It is of course understood that the upper supporting surface **186** of the bridge deck means is disposed sufficiently below the pick-up hoists to permit this operation to be carried out.

As mentioned previously, it is an object of the present invention to provide an arrangement wherein not only containers may be readily stored, but break bulk cargo of different dimensions may also be accommodated by the structure.

As seen in FIG. 8, a plurality of containers **76** similar to those previously described are provided in certain cells of the cargo hold area. In addition, in one of the cells, a movable cargo support means or platform **200** is provided, which is adapted to fit slidably within the guide means as are the containers, and yet is of such a dimension as to be held against relative movement with respect to the guide means fore and aft or athwarthships. This platform **200** as seen in FIG. 8 has a large piece of machinery **202** such as a boiler supported thereon, it being apparent that this piece of machinery is of greater vertical height than the containers **76**.

Another cell is provided with a movable cargo support means or platform **204** having a suitable piece of machinery such as indicated by reference numeral **206** supported thereby.

Means is provided for selectively holding the platforms in a particular desired vertical position within the associated cell. Referring to FIGS. 9 and 10, the holding means for the platform **204** includes a plurality of vertically spaced holes **210** provided in each of the legs of the support members **72**, similar holes of course also being provided in the leg of each of support members **70**. A pin means indicated generally by reference numeral **212** includes a reduced threaded portion **214** which is adapted to be threaded into a threaded hole **216** provided in the side of the platform **204**. The pin means also includes an enlarged cylindrical head **218** which is adapted to fit snugly within one of the holes **210** of similar cross sectional configuration provided in the support members **72**. This enlarged head **218** is provided with a socket **220** adapted to receive an end wrench for threading the pin into operative position as seen in FIGS. 9 and 10.

It is apparent that after the movable support means or platform **204** is lowered into the desired vertical position by a pick-up hoist suitably connected therewith as by means of eye bolts or the like, the pin means may be threaded into place as indicated in FIGS. 9 and 10 from an adjacent cell whereby the platform is held in the desired vertical position. It is also apparent that these pin means can be readily removed when desired to remove the platform from its cell.

Each platform is preferably provided with at least four holes similar to hole **216**, two holes being provided adjacent the corners of each side of the platform so that the platform may be fixed in desired vertical position.

Referring now to FIG. 11 of the drawings, a cargo vessel **20'** substantially identical with the cargo vessel **20** is illustrated, similar parts thereof having been given the same reference numerals primed. In this preferred form of the invention, passenger accommodation quarters indicated generally by reference numeral **230** are provided, this accommodation means being supported above the deck of the vessel by a plurality of pillars or support members **232** disposed at opposite sides of the vessel. The arrangement is such that the passenger quarters are elevated above the bridge crane means so that the bridge crane means previously described may move fore and aft so as to be disposed over the desired cargo cells.

With the arrangement as shown in FIG. 11, a substantial amount of passenger accommodations may be provided, while at the same time also enabling the ship to have the same cargo carrying capacity. In addition, the cargo loading and unloading operations are not hindered by the passenger structure, and the passenger compartment is disposed in overlying relationship to the

cargo cells so as to provide protection therefor from the elements and the like.

As seen in FIG. 2, a pair of winches **240** and **242** are supported at the upper deck of the ship at the aft portion of the middle body portion of the vessel, and these winches may be employed for moving one or more of the containers **76** along the flush deck of the vessel when desired.

A first container **76'** has ben positioned at the aft part of the middle body portion, and a further container **76''** is being moved aft along the flush deck through the intermediary of a cable **244** interconnected with winch **242**, this cable being suitably interconnected with the lifting fittings provided on the container.

Referring now to FIGS. 12–19 inclusive, these views illustrate in a somewhat schematic manner the steps involved in the method of handling according to the present invention.

It will be noted that a plurality of containers **76** are disposed in each of the cells, and a hatch cover **68** is disposed over the left-hand cell, while a hatch cover **68'** is disposed over the right-hand cell. A further hatch cover **68***c* is disposed over the central cell. The uppermost container in this central cell is identified by the reference character **76A**, and the container immediately beneath container **76A** is identified by the reference character **76B**. The remaining containers in this cell are identified by the reference character **76**.

It is assumed that the vessel is initially fully loaded as indicated in FIG. 12 with each of the cells illustrated being substantially filled with containers as illustrated. FIGS. 12 through 19 illustrate the steps involved in unloading the vessel wherein it is desired to remove container **76B** while allowing container **76A** to remain in the associated cell for unloading at a subsequent port or time.

FIG. 12 illustrates the first step involved in unloading the vessel so as to remove container **76B** while allowing container **76A** to remain in place within the cell. The trolley member **170** is moved over this central cell, and pick-up hoist **174** is operated so that the hook **100** associated therewith is connected with a sling indicated by reference character **250** which is attached to suitable fittings provided on the hatch cover **68***c*. The pick-up hoist **174** is then operated to lift the hatch cover **68***c* upwardly as indicated in FIG. 12. Trolley member **170** may then be moved laterally so as to move the hatch cover to one side, whereupon the hatch cover may be deposited on the deck or otherwise suitably stowed.

Referring now to FIG. 13, the next succeeding step in the method of unloading is illustrated. The pick-up hoist **174** is lowered, and a sling indicated by reference numeral **250** is attached to the lifting fittings of container **76A**, whereupon the pick-up hoist is operated to lift the container above the level of the flush upper deck as indicated in FIG. 13.

The next step in the method is illustrated in FIG. 14 wherein a support means indicated generally by reference character **260** has been placed in spanning relationship across the open upper end of the cell within which container **76A** was previously disposed.

Referring to FIG. 3, the construction of support **260** is more clearly illustrated. As seen in this figure, the support means includes a pair of spaced facing angle members **262** and **264** interconnected by cross members **266** to provide a rigid open framework. The angles **262** and **264** are disposed in facing relationship so that the wheels **88** of a container **76** may be supported thereon whereby the container is adapted to roll along the support means onto the adjacent deck portion.

Referring again to FIG. 14, after the support means **260** has been placed in spanning relationship to the open upper end of the cell, container **76A** is lowered onto the support means as indicated, whereupon the hook **100** of hoist **174** may be disconnected from the container.

Referring now to FIG. 15, the next steps involved in this method of unloading the vessel are indicated. The container **76A** is then rolled off of the support means onto the adjacent deck portion in a direction parallel with the longitudinal axis of the vessel. It is apparent that the container may be moved either fore or aft as desired. The container is preferably moved by employing one of the winch mechanisms mounted on the vessel, or it can of course also be handled by stevedores in those cases where it is not too heavy.

Referring now to FIG. 16, the next step in the method is illustrated. As seen in this figure, the hook **166** of pick-up hoist **164** is interconnected with a sling **266** which is attached to the lifting fittings of the container **76B**. The hoist **164** may be considered an offloading hoist in that it can be operated out along the folding jib extensions **180** of the crane means for offloading container **76B**. As seen in FIG. 16, container **76B** is lifted out of the associated cell, whereupon it may be directly offloaded by the associated pick-up hoist.

Referring now to FIG. 17, the support means **260** is again placed in spanning relationship to the open upper end of the cell, and container **76A** which has been stowed on the adjacent deck portions is moved onto the support means as illustrated in FIG. 17.

The hook **100** of hoist **174** is then again attached to container **76A** as indicated in FIG. 18 by means of a sling **250**, and the container is lifted upwardly, whereupon the support means **260** is removed from spanning relationship with the open upper end of the cell.

Container **76A** is then lowered back down into the cell to rest upon the uppermost one of the containers **76** at the bottom of the cell.

FIG. 19 illustrates container **76A** as disposed in its stowed position after lowering back into the cell, and the hatch cover **76A** is then again lowered into place by hook **100** connected with hoist **174**.

At the completion of this sequence of steps, the container **76B** has been unloaded from the vessel, while container **76A** remains stowed in its associated cell.

It is apparent that the loading procedure involved when it is desired to load container **76B** into place beneath container **76A** from the position shown in FIG. 19 to the position shown in FIG. 12 would simply involve a reversal of the steps previously described, and accordingly, the manner of loading and unloading the vessel for either placing cargo in a particular position or for removing a particular portion of the cargo is readily apparent.

I claim:

1. A cargo vessel comprising a hull defining a cargo hold area therewithin, spaced guide means provided within said cargo hold area and defining a plurality of cargo cells, said vessel having an upper deck means including a plurality of hatches defining a substantially flush deck, first and second track means supported by the upper portion of said vessel, and crane means on said first track means for moving cargo into and out of said cargo cells, each of said hatches overlying only a single one of said cargo cells whereby a particular cargo cell can be uncovered while the cargo cells immediately adjacent thereto remain covered, bridge means movable along said second track means and being disposed in spanning relationship to said cargo hold area.

2. Apparatus as defined in claim **1** wherein said crane means includes pick-up hoist means thereon for handling cargo.

3. Apparatus as defined in claim **1** including passenger accommodation means disposed in overlying spaced relationship to certain of said cargo cells and the hatches of said upper deck means so as to provide ready access to said cargo cells and at the same time providing protection therefor.

4. A cargo vessel comprising a hull defining a cargo hold area therewithin, spaced guide means provided within said cargo hold area and defining a plurality of cargo cells, said vessel having an upper deck means including a plurality of hatches defining a substantially flush deck,

and cargo transfer means on said vessel for moving cargo into and out of said cargo cells, bridge deck means supported by the upper portion of the vessel and having an upper support surface thereon for supporting cargo, and track means supported by the upper portion of said vessel, said bridge deck means being movable along said track means and being disposed in spanning relationship to said cargo hold area.

5. A cargo vessel comprising a hull defining a cargo hold area therewithin, spaced guide means provided within said cargo hold area and defining a plurality of cargo cells, said vessel having an upper deck means including a plurality of hatches defining a substantially flush deck, and cargo transfer means on said vessel for moving cargo into and out of said cargo cells, said cargo transfer means including crane means disposed in spanning relationship to said cargo hold area and movable along the upper portion of said vessel, and bridge deck means disposed in spanning relationship to said cargo hold area and movable along the upper portion of said vessel, said bridge deck means being of smaller outer dimension than the inner dimension of said crane means so that said bridge deck means is movable through said crane means.

6. A cargo vessel comprising a hull defining a cargo hold area therewithin, spaced guide means provided within said cargo hold area and defining a plurality of cargo cells, said vessel having an upper deck means including a plurality of hatches defining a substantially flush deck, and cargo transfer means on said vessel for moving cargo into and out of said cargo cells, each of said hatches overlying only a single one of said cargo cells whereby a particular cargo cell can be uncovered while the cargo cells immediately adjacent thereto remain covered, said cells being disposed immediately adjacent one another, cargo support means mounted for movement within at least one of said cells, said cargo support means comprising a platform fitting within a plurality of said guide means and being guided for movement by said guide means, and means for holding said platform in a desired vertical position, said holding means including a plurality of holes formed in said guide means, and pin means fitting within said holes, said pin means being threaded, said platform having threaded holes for receiving the threaded portion of said pin means.

7. Apparatus as defined in claim 6 wherein said pin means includes a head which fits snugly within an associated hole in the adjacent guide means, said head having a socket formed therein to receive a tool for threading the pin into operative position.

8. Apparatus as defined in claim 7 wherein said pin is so dimensioned that when it is in operative position, the head of the pin is received within the associated hole of the guide means and does not project into an adjacent cell.

9. Apparatus as defined in claim 6 wherein said pin means includes a reduced threaded portion and an enlarged head, said head having a socket formed therein to receive a tool.

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