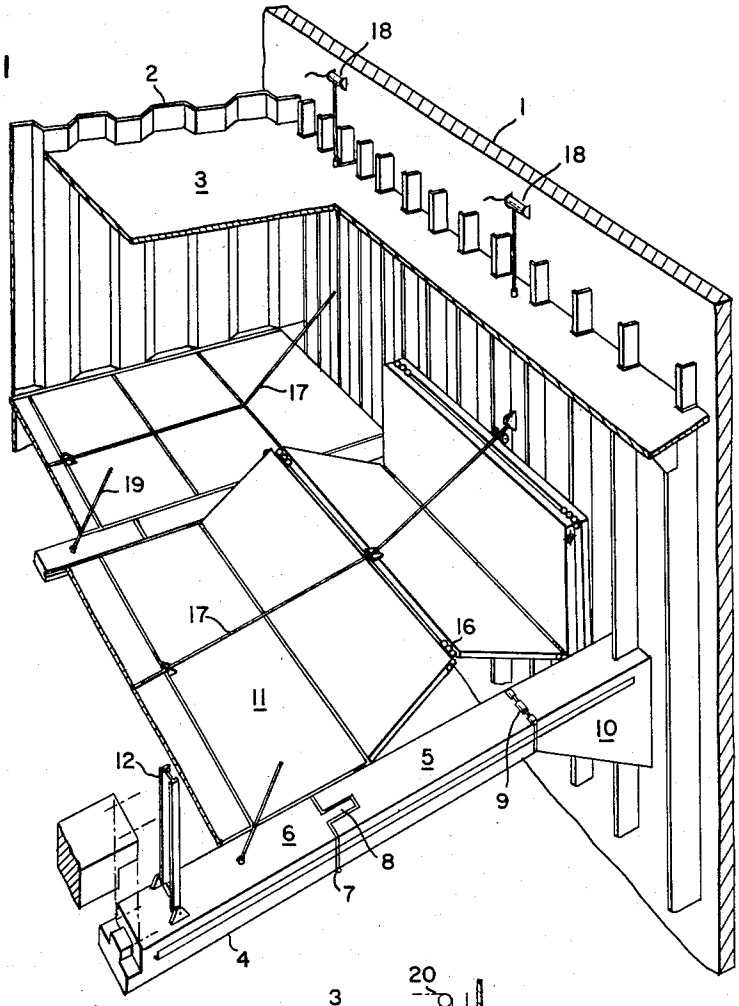
Nov. 5, 1963 N. B. D. BLOMBERG ETAL 3,109,402

DETACHABLE TWEEN DECK CONSTRUCTION

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FIG. 1



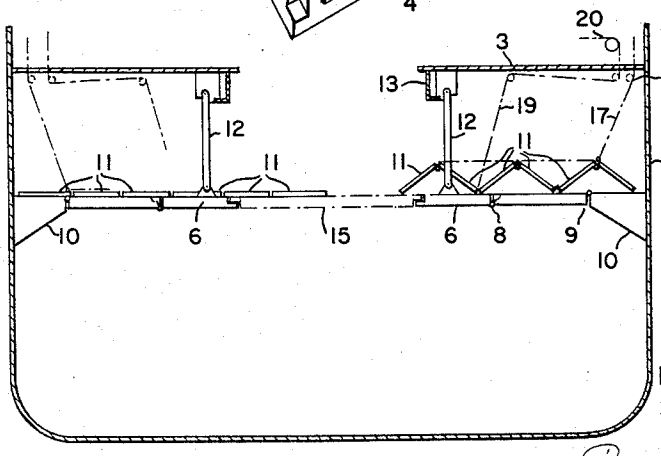


FIG. 5

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DETACHABLE TWEEN DECK CONSTRUCTION

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FIG. 2

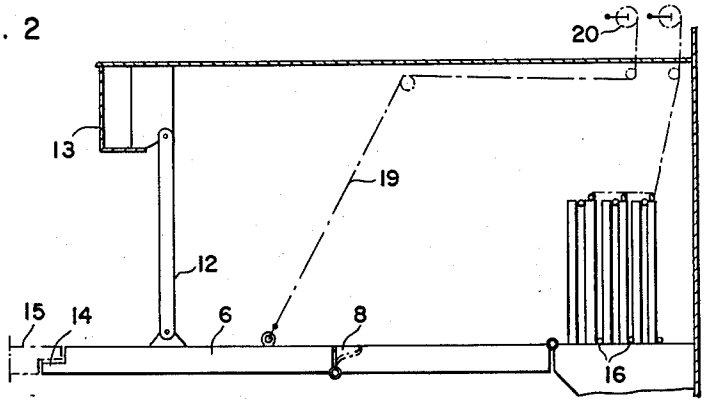


FIG. 3

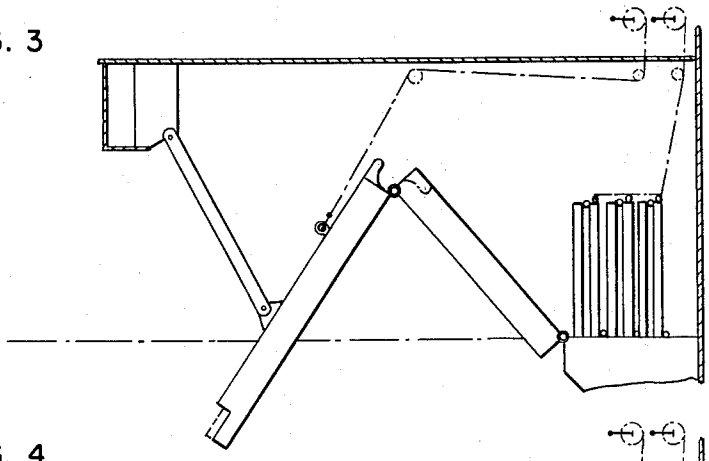
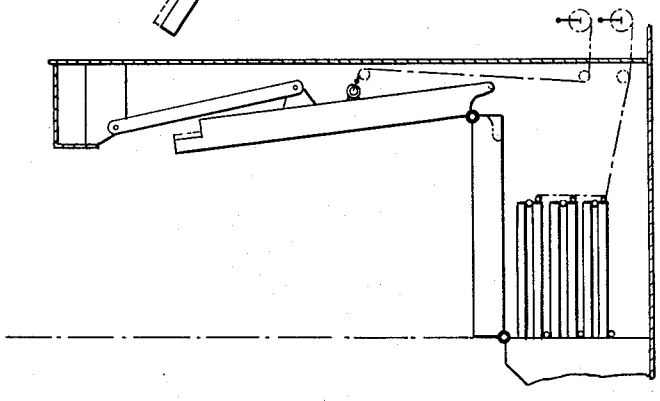


FIG. 4



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3,109,402

DETACHABLE TWEEN DECK CONSTRUCTION

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4 Claims. (Cl. 114—76)

In ships there can on many occasions appear different demands concerning the possibilities for stowing the cargo. On certain occasions a large cargo hold is desired for shipping bulk cargo, whereas on other occasions it will be more suitable to have the hold divided by tween decks for shipping general cargo of different kinds. Many times a ship will have one type of cargo during the outward trip and another type of cargo during the return trip, and this will bring about great demands on the possibilities for dividing the cargo hold. Particularly in connection with the transport of motorcars it has been proposed different detachable tween deck constructions, comprising a number of supporting beams and platforms resting on said beams. These constructions require, however, rather much time for the erecting and removing, and they take up useful space.

The present invention relates to a tween deck construction, which permits the removal to be done with a minimum of work, and where the detached parts require a small space and automatically are brought to a space of small value for stowing the ordinary cargo. The invention is mainly characterized by that each supporting beam comprises two portions hingedly connected to each other, one of which is pivotally connected to a vertical wall construction (side plating or bulkhead) whereas the second is carried by a stanchion swingably connected to the superimposed ordinary deck. The parts are so dimensioned, that the first mentioned supporting beam portion in connection with the removing of the tween deck can be raised vertically along the wall, thereby bringing the second beam portion together with the stanchion up below the superimposed deck. Supporting beams are suitably arranged in two series, one along each of the side platings, extending therefrom approximately to the part corresponding to the hatch opening in the superimposed deck. The stanchions may then be hung up in the reinforced construction forming part of the coaming therein. The platforms are suitably in a manner knewn per se, designed as accordionwise folding sections connected to each other and provided with wheels or similar members, which allow an easy laying and removing, respectively.

In the annexed drawings one embodiment of the invention is shown by way of example as applied to an additional tween deck for a ship, and which is preferably adapted for shipping motorcars on certain occasions.

FIGURE 1 shows schematically and in perspective a part of the tween deck during the laying out procedure;

FIGURE 2 is a cross-section through a part of the ship showing an ordinary deck and a portion of the additional tween deck installed;

FIGURE 3 shows one phase during the removing;

FIGURE 4 finally the parts of the tween deck in a wholly stowed position; and,

FIGURE 5 is a cross section through the ship showing still another view of the tween deck construction.

In FIGURE 1, which shows a corner of a hatch hold, the side plating of the ship is denoted by 1 and a transversal bulkhead by 2. Numeral 3 designates an ordinary deck, which in this case is a fixed tween deck. A number of parallel supporting beams are arranged in connection with both side platings, each beam comprising a first portion 5 and a second portion 6. These portions are connected with one another by means of a hinge 7. This is

fitted to the lower edge of the portions in such a manner that these in working position are prevented from moving past the horizontal line. In connection with the joint there is furthermore a retaining member 8, which adds to this effect. The first portion 5 is connected to the side plating by a hinge 9, which is fitted to a bracket 10 projecting from the side plating as much as corresponds to the measure of the platforms 11 when folded together. The hinge is in this case arranged at the upper surface of the beam in order to obtain an effect similar to that mentioned above concerning the working position. The second portion 6 is carried by a stanchion 12, which is swingably connected to the hatch coaming of the superimposed deck as well as to the supporting beam portion. The total length of both supporting beam portions and the bracket mainly corresponds to the distance from the side plating to the hatch opening. The supporting beam portions 6 are at their outer ends 14 shaped to receive a hatch beam 15, which is laid down by means of a cargo winch or the like. In this manner a supporting beam construction is obtained, which extends transversely across the ship, and the additional tween deck will thus cover the whole hold area. The platforms 11 forming the real deck are, in a manner known per se, accordionwise connected to each other by hinges 16 and are provided with wheels in order to permit an easy laying and removing, respectively. The wheels run on tracks arranged in the sides of the supporting beams. The platforms are operated by a wire 17 actuated by the aid of a winch device 18, arranged in the space above the ordinary tween deck 3.

As the platforms will cover the space also beneath the hatch opening in the superimposed deck it will be possible to handle special cargo, for instance heavy pieces of machinery or big containers, which are hard to move sideways within the ship by ordinary means. The platforms from one side of the ship are moved outwards to cover the space below the hatch opening and the pieces of special cargo are lowered down on them. Thereafter the platforms are moved sidewise and the cargo is stowed in the side part of the ship without much trouble.

The bracket 10 is located at a point below the ordinary tween deck which suits the cargo mainly shipped, and the length of the first supporting beam portion 5 corresponds essentially to the measure between the bracket 10 and said deck. The length of the second portion and the stanchion 12, respectively, are so choosen that last-mentioned parts, when the portion 5 is brought to vertical position, will be moved up below the ordinary deck. This will be performed by means of a second pulling wire 19 actuated by a second winch device 20, in the upper tween deck space. The whole additional tween deck will now be stowed in the outer upper corner of the hold, which usually is very difficult to reach for stowing and in this place it is of no disadvantage. The supporting beam portions do not need to be unfixed from each other or from the bracket and stanchion, respectively. The whole arrangement can be of a simple but strong construction, as it is not necessary to pay any attention to the disconnection of joints and the securing of separate members.

The details of the arrangement can, of course, be varied in many ways within the scope of the appending claims. The platforms may consist of separate units, which however ought to be stowed on the brackets 10. The supporting beams may also be connected for instance to a transverse bulkhead or some other vertical wall construction.

What we claim is:

1. In a ship having at least one ordinary fixed deck provided with a hatch opening and forming the upper boundary of a hatch hold defined by longitudinal and transverse mainly vertical walls,

a detachable tween deck in said hold composed of par-

allel supporting beams and removable platforms carried thereby

said supporting beams comprising first and second portions hingedly connected to each other

pivots adjacent two opposite vertical walls for the outer ends of two juxtaposed first beam portions arranged at a distance below the fixed deck corresponding to the length of said first beam portions

stanchions swingably connected to the hatch coaming of said ordinary deck and to the inner ends of the corresponding second beam portions, respectively,

and means comprising a pulling member between said supporting beams and a winch device above said fixed deck for raising the first beam portion vertically along said two opposite vertical walls and bringing the second beam portion together with the stanchion up below said fixed deck.

2. A detachable tween deck construction according to claim 1 in which the inner ends of the two meeting beams are designed to receive the ends of a common hatch beam, and hatch beams to bridge the gap between said inner ends.

3. In a ship having at least one ordinary fixed deck provided with a hatch opening and forming the upper boundary of a hatch hold defined by longitudinal and transverse mainly vertical walls,

a detachable tween deck in said hold composed of parallel supporting beams and removable platforms carried thereby,

said supporting beams comprising first and second portions hingedly connected to each other,

pivots on brackets fitted to opposite vertical walls for the outer ends of two juxtaposed first beam portions arranged at a distance below the fixed deck corresponding to the length of said first beam portions,

said bracket having sufficient length to act as a stowing place for the pertaining platforms,

a stanchion swingably connected to said ordinary deck and to the inner end of the second beam portion, respectively,

and means comprising a pulling member between said supporting beam and a winch device above said fixed deck for raising the first beam portion vertically along said wall and bringing the second beam portion together with the stanchion up below said fixed deck.

4. In a ship having at least one ordinary fixed deck provided with a hatch opening and forming the upper boundary of a hatch hold defined by longitudinal and transverse mainly vertical walls,

a detachable tween deck in said hold composed of parallel supporting beams and removable platforms carried thereby,

said supporting beams comprising first and second portions hingedly connected to each other, the inner ends of said second portions being designed to receive and to cooperate with the ends of a common hatch beam;

common hatch beams to bridge the gap between the inner ends of the hinged beam portions;

pivots on brackets at two opposite vertical walls for the outer ends of two juxtaposed first beam portions arranged at a distance below the fixed deck corresponding to the length of said first beam portions,

said brackets having sufficient length to act as a stowing place for the pertaining platforms;

a stanchion swingably connected to said ordinary deck and to the inner end of the second beam portion, respectively;

means for raising said first beam portions vertically along said longitudinal walls and to bring the second beam portions together with the stanchions up below said fixed deck;

hinge means for the connection of a number of said platforms between two parallel beam supports and reaching from the longitudinal walls towards the middle of the hold;

wheels on said platforms to facilitate a movement along tracks on the hinged beam portions and on the hatch beams; and

means for moving said connected platforms to a horizontal position on said supporting beams and therefrom to a stowed position on the brackets.

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