Feb. 28, 1956 H. KUMMERMAN 2,736,287

SHIP HOLD WITH REMOVABLE FLOORING STRUCTURE

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FIG. 1

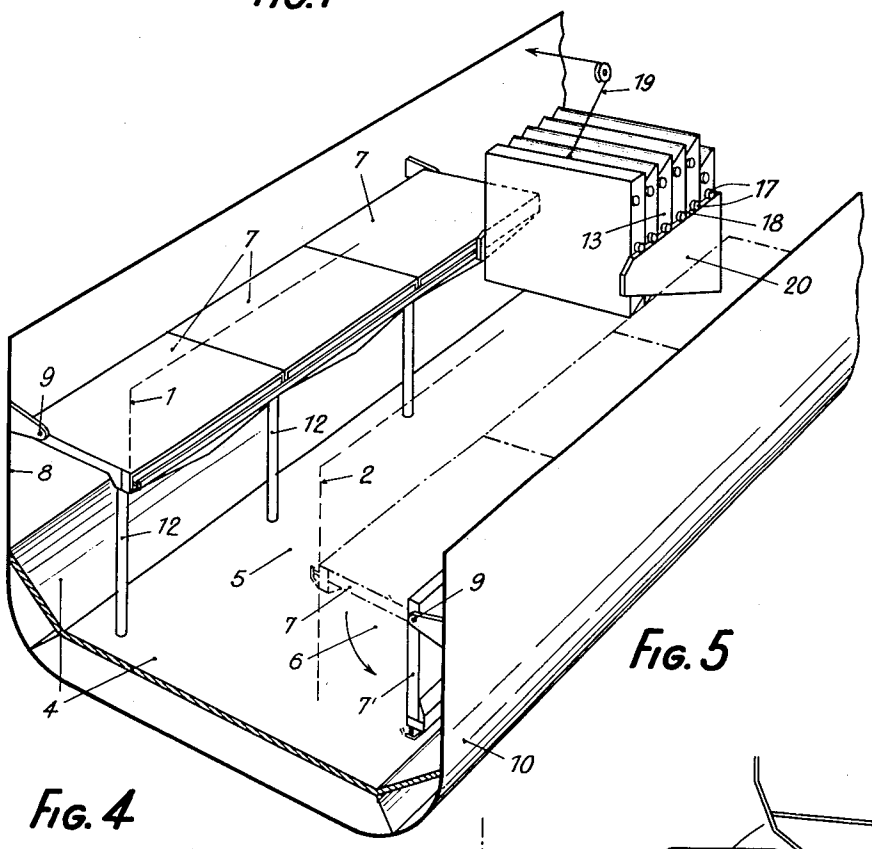


FIG. 5

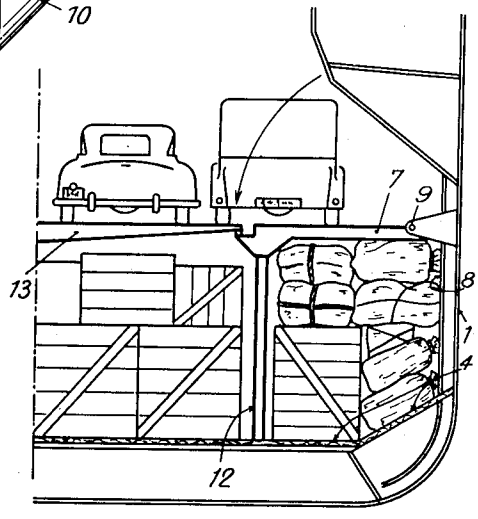
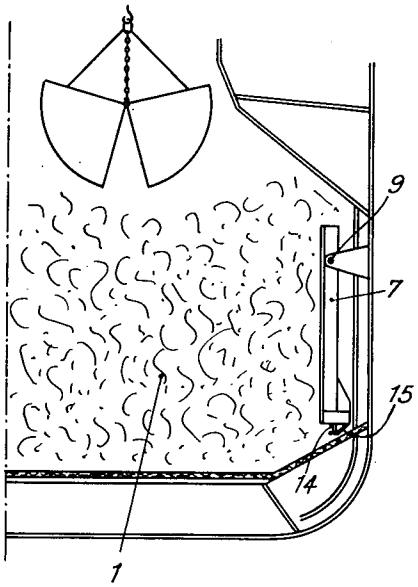


FIG. 4



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FIG. 2

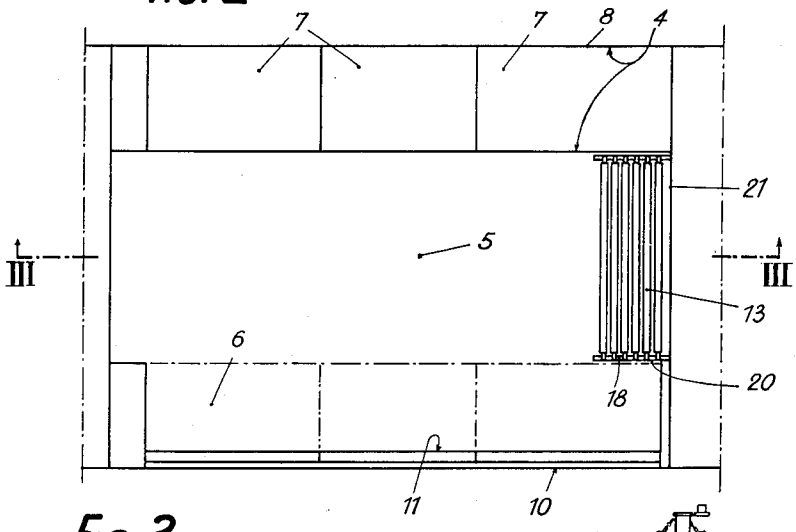
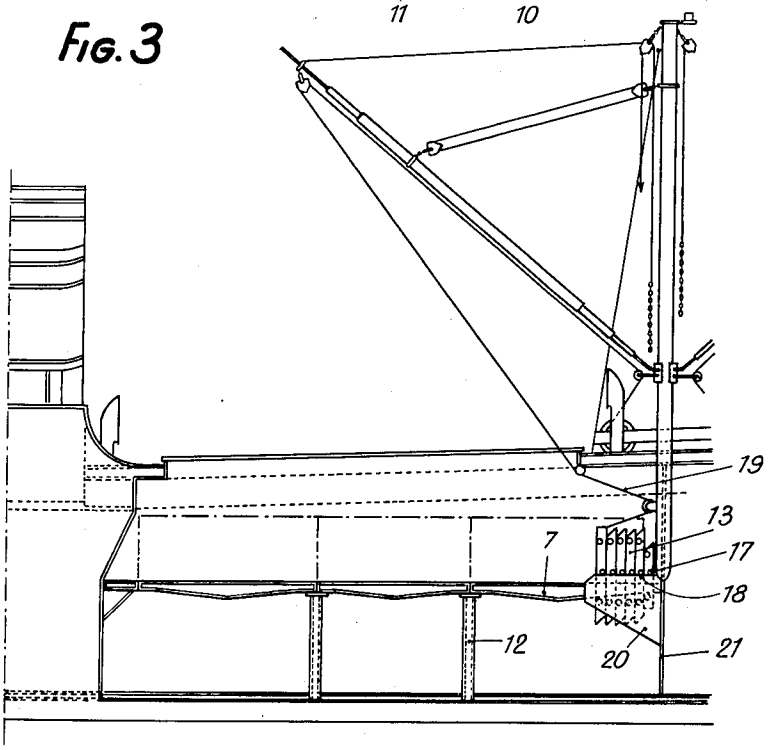


FIG. 3



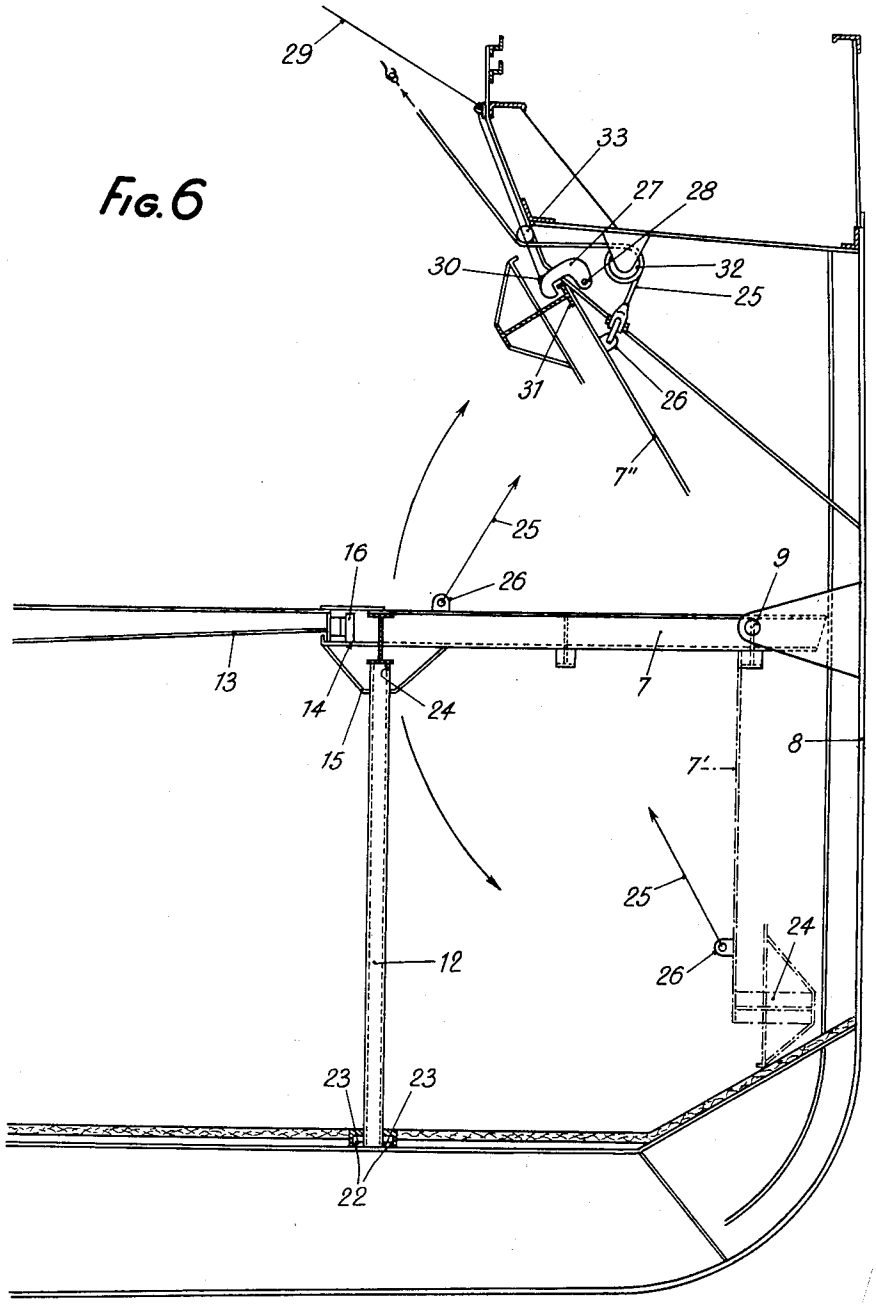
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SHIP HOLD WITH REMOVABLE FLOORING STRUCTURE

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FIG. 6



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FIG. 7

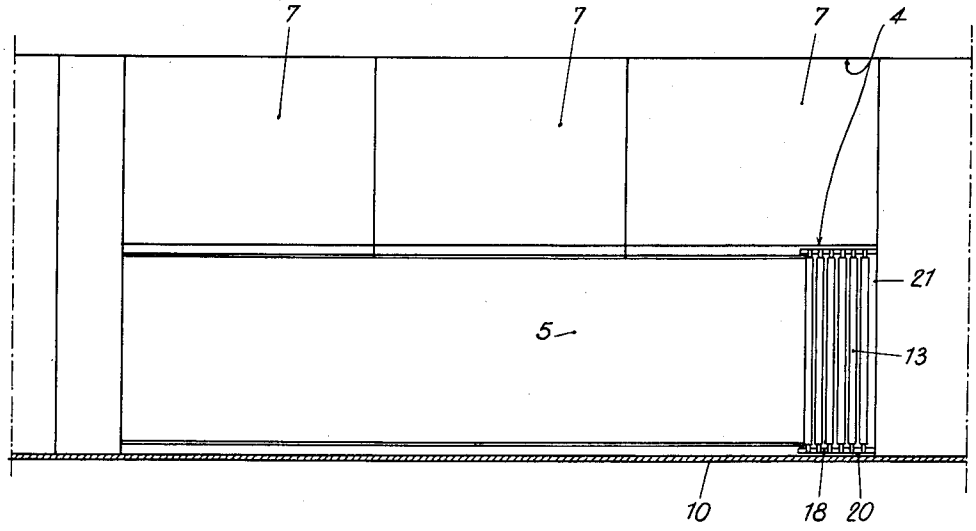


FIG. 8

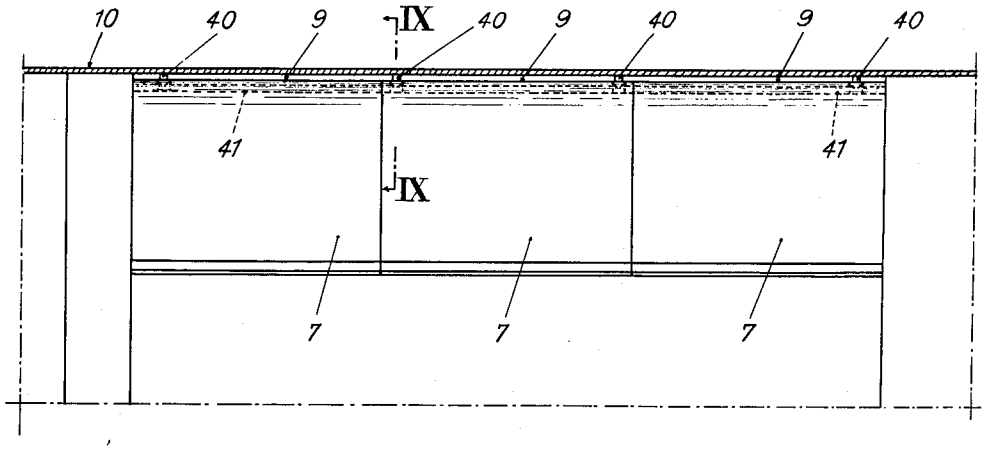
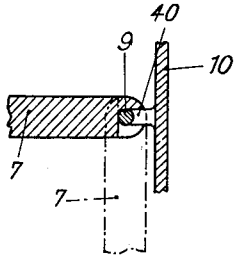


FIG. 9



United States Patent Office 2,736,287 Patented Feb. 28, 1956

2,736,287

SHIP HOLD WITH REMOVABLE FLOORING STRUCTURE

Henri Kummerman, Neuilly-sur-Seine, France

Application January 7, 1952, Serial No. 265,265

Claims priority, application France February 16, 1951

6 Claims. (Cl. 114—72)

The present invention essentially relates to a removable platform providing an intermediate flooring for ships' holds and similar enclosures, and adapted to partition the hold into several separate sections or compartments.

A platform according to this invention is characterised in that it consists of at least one rank or series of aligned panels, the panels in each rank being pivoted about a common axis which may form part of a wall of the hold or similar enclosure to which the invention is applied, and at least one rank or series of parallel rolling panels, of the so-called "quick-operating" type, as generally used for the closure of hatches on board ships, adjacent to the pivoted panels in their position of use resting with their free edges upon girders or props which may or may not be removable.

It will readily be understood that the platform can be easily opened simply by displacing the rolling platforms to bring them to their stowed positions.

Moreover, the over-all width of the platform is divided into as many sections as there are parallel series of panels used.

Each of the panels may therefore be provided with a comparatively small width and this is especially true of the panels pivoted to the walls of the hold or on pivot shafts specially provided for the purpose. This is a very important advantage, first because of the resulting saving in space, and second owing to the increased facilities in operation within the holds. The problem of stowing the rolling panels, regardless of their width, is solved in a manner similar to that used in the case of ordinary hatches. In the present instance, it will therefore be possible to impart to such panels a width definitely smaller than that of the pivoted panels, without any difficulty, thus reducing the width of the pivoted panels. The pivoted panels will thus be small and consequently easily operable.

For instance, supposing two sets of pivoted panels are used at the opposite sides of the hold and a set of rolling panels intermediate the pivoted ones, the rolling panels can easily be made with a width two or three times greater than the pivoted panels.

Besides, the rolling panels can be displaced with great ease to open up a passage into the lower level of the hold and this can be done without having to move the pivoted panels, which are of course cumbersome and unwieldy.

According to another feature of the invention, the free edges of the pivoted panels comprise means serving as guides or runways for the rolling panels.

In its simplest form of embodiment the invention may use a rank of pivoted panels associated with an adjacent rank of rolling panels, the latter having an edge thereof running on the runway provided by the edges of the pivoted panels and their opposite edges riding on a fixed or removably runway provided on the opposite side wall of the hold or upon suitable fixtures.

Where the platform is designed to extend across the hold from one side to the other thereof, two ranks of

pivoted panels may be provided one on each side of the hold with an intermediate or central rank of rolling panels riding on the free edges of the pivoted panels.

Where the removable platform does not extend across the opposite sides of the hold, the panels may be pivoted either on two separate shafts extending along the hold, or on one shaft and on one side wall of the hold respectively.

It will be understood that rolling panels of any suitable type may be used in embodying the invention. For example, the rolling panels known in the trade as MacGregor panels may be employed.

The invention of course comprises any installations and holds arranged equipped to the principles above set forth.

Further features of the invention will result from the ensuing description.

In the accompanying drawings, given exclusively by way of example.

Fig. 1 is a diagrammatic perspective view of a hold equipped according to the invention, with a platform extending across the hold from one side wall to the opposite one;

Fig. 2 is a plan view of the same hold with several hinged panels in the retracted position;

Fig. 3 is a diagrammatic section on line III—III of Fig 2;

Fig. 4 is a partial transverse cross-section of a ship with pivoted panels in their retracted position;

Fig. 5 is a view similar to Fig. 4 with the panels raised to provide a platform;

Fig. 6 is a view on an enlarged scale of a hold illustrating the operation of the pivoted panels;

Figure 7 is a plan sectional view of a modification;

Figure 8 is a corresponding longitudinal section;

Figure 9 is a section on line IX—IX of Figure 8.

In the examplary construction illustrated, the hold **1** of a ship is divided by two ideal vertical planes **2** and **3** into three compartments or sections **4**, **5** and **6**. Obviously the number of such sections is essentially arbitrary. According to the invention, a first series of adjacent panels **7** are provided, pivoted on the side wall **8** of the hold. The pivotal connection is effected e. g. by means of hinges **9** (Fig. 4).

It is evident that these hinges **9** may be intended and adapted to connect the panels, either directly with the ship's hull, or with a shaft extending along and independently of said hull. Such structures may be executed in any well known manner and have not been further illustrated.

The section **6** adjacent to the opposite side wall **10** of the hold is provided with panels **11** similar to the panels **7**.

Vertical girders, or stanchions **12**, are provided in the planes **2** and **3** separating the hold sections **4**, **5** and **5**, **6**.

The central or intermediate section **5** is closed at its top by panels **13** of the quick-operating type. These panels are preferably of the type capable of rolling and stowable in vertical juxtaposed relation at one end of the hold. These panels may advantageously be of the type known in the trade as MacGregor panels. The panels shown in the drawings are interconnected by suitable chains or cables, and belong to the type described and claimed in French Patent 976,386 filed December 10, 1948.

Such panels generally are fitted with rollers adapted to ride on the edges of the hatchway. In the present instance, runways may be provided on the free edges of the pivoted panels. In the drawings, each of these pivoted panels **7**, **11** (Figs. 4, 5 and 6) is shown as having such a runway formed thereon by a substantially horizontal steel element **14** supported for example by

brackets 15. The rolling panels 13 are provided with rollers 16 riding on these runway elements 14.

As shown in Figs. 1, 2 and 3, the rolling panels 13 may be stowed in substantially vertical condition at one end of the hold. For this purpose, these panels are provided with pivots 17 cooperating with guides 18. The rolling panels may be operated by cables or similar transfer means of course with the help of the suitable guiding surfaces 18. The operation of such cables is evident and besides described in the above mentioned French patent. Generally two cables such as 19 are provided and pulls exerted successively and externally in opposite directions on said cables will cause the panels to cooperate with the guideway 20 and to be tilted in and out of the horizontal position.

The general operation of the panels 13 is identical with that of the usual hatch cover panels. For instance these panels are pulled by suitable cables which cause them upon sliding on guide 18 to tilt about the parts 17 and bring them into a horizontal position in which they rest on rollers 16 and can be brought further so as to cover the opening between the two rows of panels 7.

It will appear from the disclosure that the arrangement according to the invention provides a general platform which forms an intermediate flooring with only one opening through it, somewhat like a hatchway, and adapted to be closed by means similar to those used to close hatchways.

Moreover, the rolling panels 13 can be provided with a width greater than that of the pivoted panels 7. The latter are comparatively narrow, so as to be as convenient as possible to rock.

The manner in which the guideways 18 for the rolling panels 13 are secured is diagrammatically illustrated in Fig. 3. This may be effected, as shown, by means of reinforcing gusset-plates 20 secured to the end walls 21 of the hold.

Fig. 6 illustrates on an enlarged scale the arrangement of the stanchions 12. These may be removable or fixed as desired. The drawing shows them as removable. In the bottom of the hold, a socket 22 is provided into which the foot of the girder 12 provided with a pair of projecting fingers 23 is inserted. The girder 12 is then rotated about its vertical axis and pinned in position. The top of the girder or stanchion is inserted into a socket 24 provided on the under side of the panels 7, 11.

The chain lines in Fig. 6 show the panels 7' in their collapsed position, which is the position used when the hold is to be laden in bulk with loose cargo. To bring the panels to their substantially horizontal position, the cable 25, fastened at 26 is pulled. To load or unload the cargo heaped up at 4, it is only necessary to raise the panels 7 to the position diagrammatically indicated at 7'' in Fig. 6.

The panel or panels 7 which are adjacent plate 20 are correspondingly arranged so as not to interfere with this latter during their movement toward and from positions 7, 7' and 7''.

If desired, means may be provided for latching the pivoted panels 7 in their raised position. Thus, a member 27 may be provided in the form of a hook pivoted at 28. A cable 29 is fastened to the hook at 30 and enables its being rocked about its pivot. The hook 27 cooperated with a flange or web 31 forming part of the panel 7.

The hoisting cable 25 of the panel is trained about a pulley 32 and a roller 33.

Operation of the device is simply described. After the panel has been raised, the cables 25 and 29 are released. The panel bears by gravity on the hook 27 and blocks it. To release the panel, it is merely necessary to pull the cable 29.

Figures 7, 8 and 9 illustrate the embodiment in which a narrow space is available in the hold. In such an instance use is made of but a single row of hinged panels 7 associated with a single row of rolling panels 13. The mounting of the hinged panels on the ship's hull may be of any conventional nature. Figure 9 illustrates such a mounting. In this case the ship's hull 10 carries supporting members 40 adapted to carry hinge axis 9.

While the drawing shows the arrangement of a stanchion for two adjacent panels, different other arrangements may be adopted. Moreover, the invention is in no way restricted to the form of embodiment illustrated and described, given merely by way of example.

What I claim is:

1. In a ship's hold having two side walls and a floor, a removable flooring structure comprising at least one panel hingedly connected at one edge thereof to one of the side walls of the hold and disposed in a plane generally parallel to and spaced from the floor of the hold, at least a second panel hingedly connected at one edge thereof to the other side wall of the hold and disposed generally in the plane of the first panel, retractible supporting means engaging said panels and supporting said panels in a substantially horizontal plane with the free edges of the panels in spaced apart relation, guiding means on the free ends of said panels, a series of movable panels for filling in the space between the free edges of said first and second panels, rollers on said series of panels of a configuration and spacing to engage said guiding means, whereby said series of panels are supported in substantially the same horizontal plane as said first and second panels to provide therewith a floor structure which is substantially parallel to and vertically spaced above the floor of the hold.

2. Structure as claimed in claim 1 wherein the roller mounted panels are substantially wider than the hinged panels.

3. In a ship's hold having flooring structure as claimed in claim 1 and having end walls, horizontal supporting and storing means adjacent an end wall adjacent and generally parallel to the edges of said hingedly connected panels remote from the hinge and lying generally in said plane, guide means on said support and storing means approximately aligned with the guiding means of said free ends of said hinged panels and positioned to receive the rollers on said series of panels and thereby store the panels of said series.

4. In a ship's hold having side walls, a structure comprising at least one series of aligned panels, hinge means securing one of the edges of said panels to one of said side walls in generally a straight line, guide means on the other edge of each of said panels, retractable independent supporting means engaging said panels supporting them in said generally straight line, said panels when supported thereby constituting a generally horizontal load supporting surface, and said guide means coincidentally constituting a guideway, at least one series of panels each panel having roller means and pivot means mounted thereon, a second guideway supported within said hold in generally the same plane as said load supporting surface and said first guideway, means in said hold, adjacent an end panel of said first series of panels, said adjacent means lying approximately in the plane of said guideways, said adjacent means formed with trackway surfaces, said series of panels including said roller and pivot means positioned on said trackway surfaces when in stored position, and transfer means moving said roller panels to horizontal position upon said guideways thereby to provide an additional load supporting surface in common with that of the first mentioned panels.

5. Structure as claimed in claim 4 wherein said second guideway is supported by the other wall of the hold.

6. Structure as claimed in claim 4 wherein means are provided for raising said hinged panels above their horizontal positions comprising pulling means secured to the

hinged panels, means guiding said pulling means, means latching said hinged panels in their raised positions and control means for releasing said latching means.

References Cited in the file of this patent

UNITED STATES PATENTS

2,150,763	Elliott	Mar. 14, 1939
2,242,635	Whittelsey	May 20, 1941
2,329,941	Posin	Sept. 21, 1943
2,619,066	Otter	Nov. 25, 1952

FOREIGN PATENTS

615,369	Great Britain	Jan. 5, 1949
661,785	Great Britain	Nov. 28, 1951