April 13, 1954 M. BICH ET AL 2,674,967

SHIP'S HATCH CONSTRUCTION

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FIG. 1

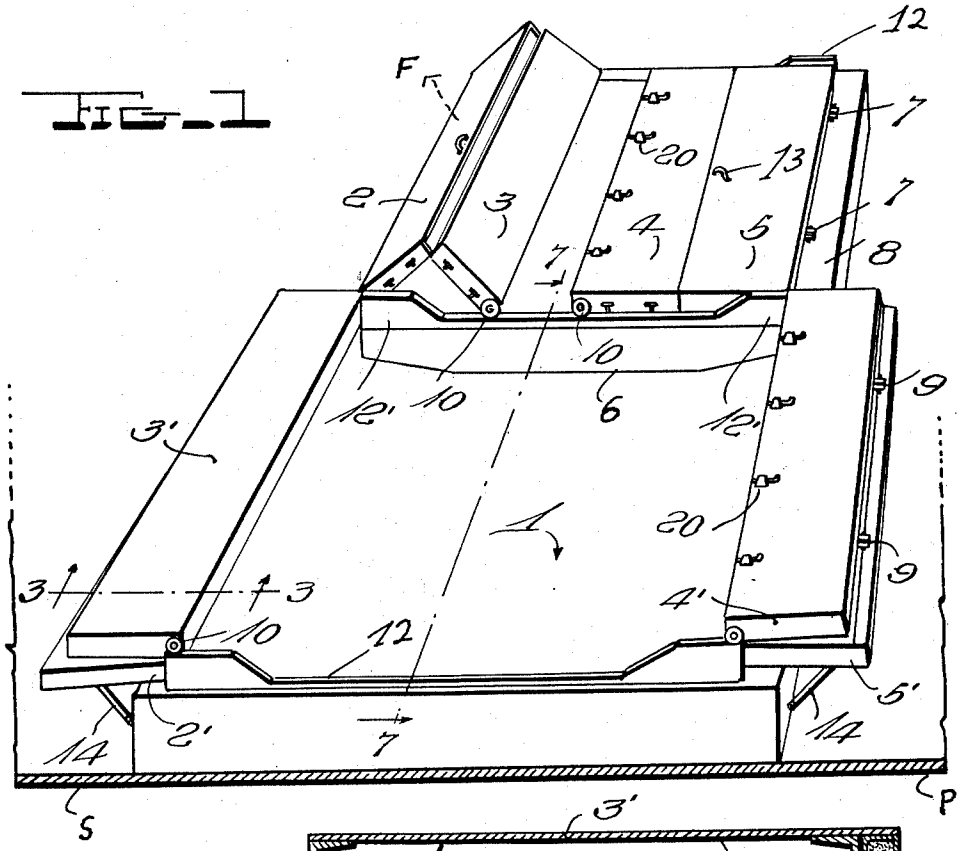
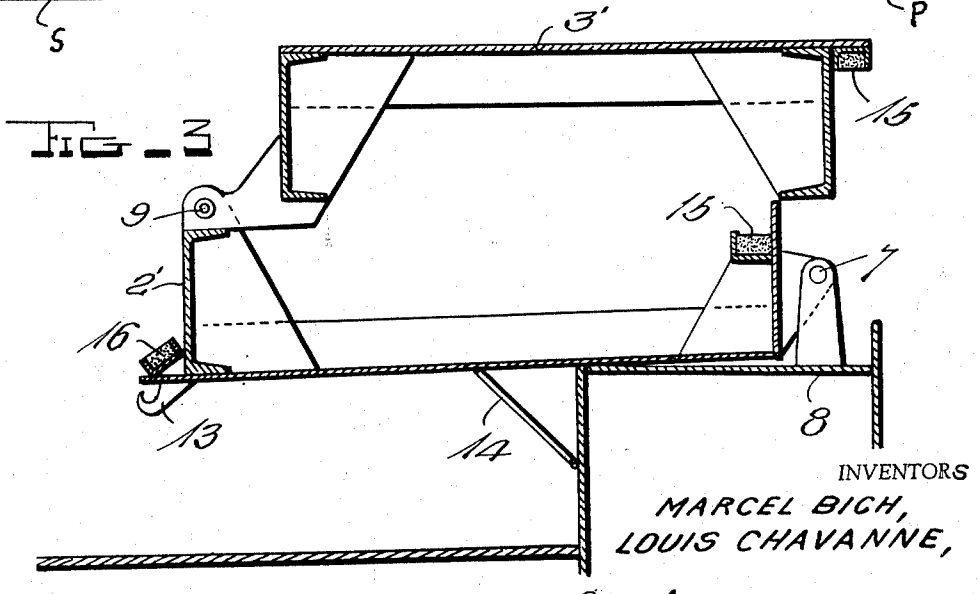


FIG. 3



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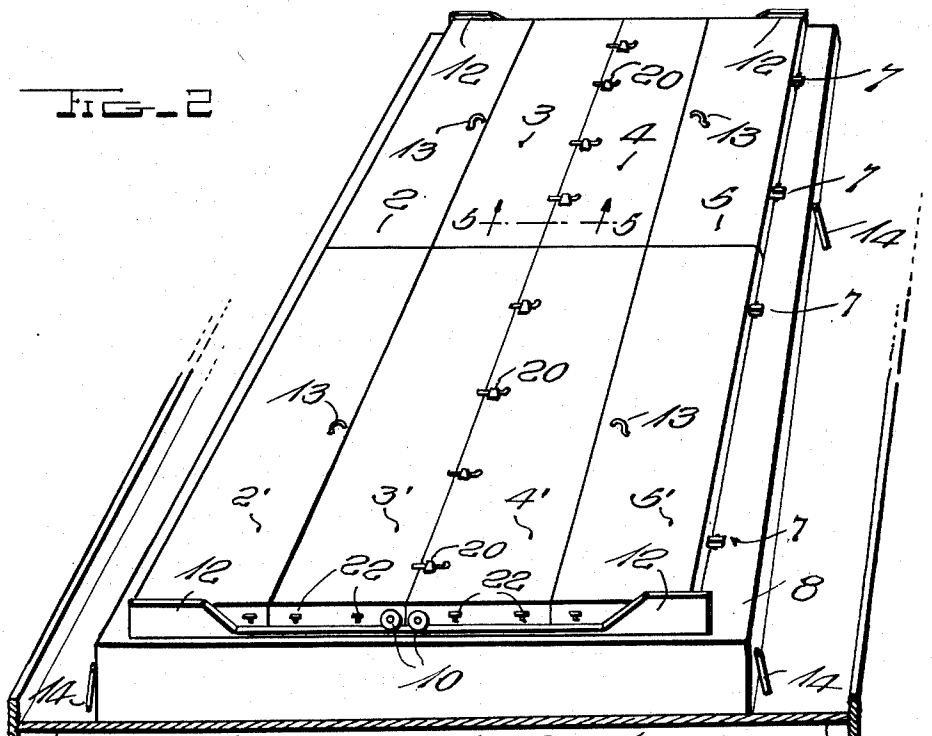
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FIG. 2



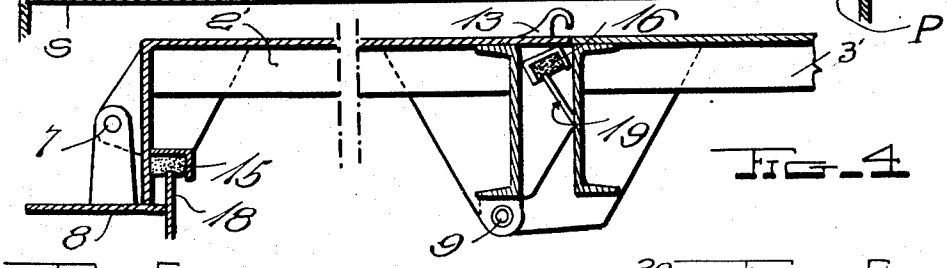


FIG. 4

FIG. 5

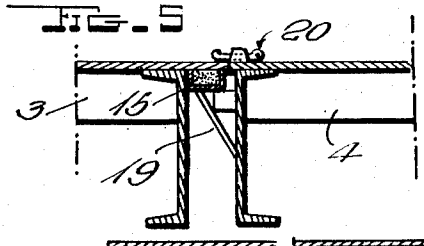
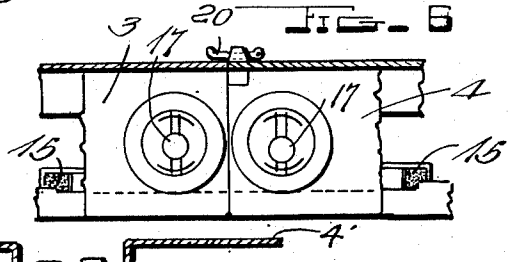


FIG. 6



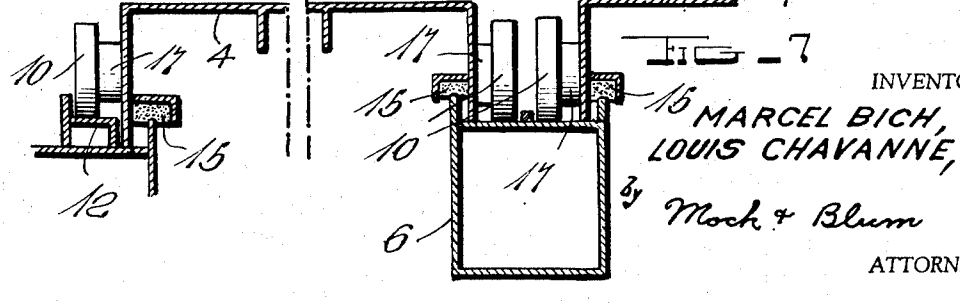


FIG. 7

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SHIP'S HATCH CONSTRUCTION

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Application July 2, 1949, Serial No. 102,884

Claims priority, application France August 4, 1948

1 Claim. (Cl. 114—202)

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This invention relates to an improved arrangement of the hatches or hatch-covers aboard ship, and to an improved manner of operating said hatch-covers in opening and closing the hatchway.

The usual procedure in opening and closing hatchways on shipboard involves the use of pivotally interconnected hatches or hatch-covers equal in length to the width of the hatchway and the width of said covers being equal to a sub-multiple (usually a third or a quarter) of the length dimension of said hatchway. Such hatch-covers are pivotally interconnected and adapted to be folded in vertical condition forward and aft of the hatchway. In their folded condition they may thus reach a height of 8 or 10 ft. so that they obstruct the view of the shiphand operating the winch. Where the winch-operator is stationed directly on deck without being elevated above it, his field of vision is strictly nil. Moreover, in their folded condition the hatch-covers remain in a state of imperfect balance since they are always placed edgewise. Their number and position is determined by the length dimension of the hold or hatchway, which is generally from about 25 to 40 ft.

All the above difficulties of conventional hatch-covering arrangements are solved in a simple and desirable manner by the present invention. The method of the invention essentially consists of closing the hatchway by means of hatch-covers made up of one or more sections or elements disposed in the direction of the longitudinal axis of the hatchway, said hatch covers or elements being pivotally interconnected, for instance in pairs.

According to another feature of the invention, the hatchways are opened by folding up the interpivoted hatch-covers or elements and laying them flat or substantially flat along the longitudinal edges of the hatchways.

Thus it will be seen that a first feature of the invention amounts to substituting a longitudinal subdivisioning of the hatch-cover sections for the conventional transverse subdivisioning thereof. As a result, the width dimension of the opening of the hold or hatchway, generally about 15 to 30 ft. in width, becomes substituted for the length dimension of said opening which may reach as much as 40 ft. and more. Accordingly in the arrangement of the invention, the width of the individual cover sections or elements will attain about 6 ft. 6" at the utmost.

In the second place, as stated, the hatch-covers are stowed lengthwise and flat along the longitudinal sides of the hatchway. In the prior arrangements, the hatch-covers were stowed along the transverse sides of the hatchway at overcrowded and unconvenient locations. Moreover the method of the invention makes it possible to fold the hatch-cover elements in flat horizontal position without the projections at the port and starboard sides of the hold substantially interfering with the shipping of deck-cargo. There is practically no consumption of valuable space by the hatch-covers and at the same time the latter are provided with a stable position of balance. Where on the other hand hatch-covers of a different type are used adapted to be stowed vertically along the longitudinal sides of the hold, the balance is very unstable and thus constitutes a hazard for the crew.

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Another noteworthy point is that the employment of laterally-stowed hatch-covers makes possible the use of quick-operating metallic hatch-covers, even where the winches are not placed on winch-platforms or when the winches are placed on deck absolutely flush with the fore or aft sides of the hatchways, that is in instances where it was in the past impracticable to apply any metal hatch-cover systems; any other hatch-cover systems adapted to clear the hatchway opening on the sides thereof necessarily take up on the starboard or port decks an area corresponding to one half the width of the hatchway, thus preventing the shipping of deck-cargo.

According to another feature of the invention, the metallic hatch-covers are so folded up that in their open position the inner faces are in contact together and the outer faces only remain exposed to adverse weather conditions. In particular, when it rains the rain-water will not collect in the depressions formed by the iron sheeting and the reinforcements, whence it would spill into the hold as the hatches are closed.

The invention also includes means whereby the above-described method may be put into practice.

The above and further objects, features and advantages of the invention will appear from the ensuing drawings, given by way of indication and not of limitation, and wherein:

Figure 1 is a perspective view of a hatch structure constructed in accordance with this invention, with one-half of the hatch structure shown in an open position and the other half shown in a closed position;

Figure 2 is a perspective view of the hatch structure with both halves thereof shown in closed position;

Figure 3 is a cross-sectional view taken on line 3—3 of Figure 1 and showing two of the hatch cover elements or sections in an open position;

Figure 4 is a similar cross-sectional view of such hatch cover elements in a closed position;

Figure 5 is a detailed cross-sectional view taken on line 5—5 of Figure 2;

Figure 6 is an enlarged fragmentary elevational view of the roller mounting for the inner section of the hatch cover, and,

Figure 7 is a longitudinal sectional view taken on line 7—7 of Figure 1 and showing the inner sections of both halves in closed position.

In the exemplary embodiment shown the hatchway 1 is closed by means of four hatch-cover elements or sections 2, 3, 4 and 5. If the total width of the hatchway is L, each section will have a width

$$\frac{L}{4}$$

As shown in the drawings, the hatchway is of comparatively great length, and therefore comprises an intermediate support or cross-beam 6. Accordingly a second set of hatch-cover elements are provided, as shown at 2', 3', 4' and 5' in respective alignment with the elements 2, 3, 4 and 5. The end hatch-cover elements 2 and 5 are pivoted as through the hinges 7 to the longitudinal side 8 of the hatchway 1. The intermediate elements 3 and 4 are pivoted to said end-elements 2 and 5 respectively as shown at 9. The intermediate elements are provided with rollers 10 adapted to ride on the transverse side 11 of the hatchway provided for that purpose with runways 12. The intermediate supporting cross-beam 6 is provided with a similar runway 12'.

To operate the hatches the elements 2 and 5 are pulled by means of the hook attachments 13 in the direction indicated by arrow F. These elements are rotated about their hinges 7 while the elements 3 and 4 connected with the elements 2 and 5 by the hinges 9 are moved over the runways 12 through the medium of the rollers 10. As the elements 2 and 5 reach a substantially vertical position the rollers 10 engage the runway 12 whereby, said runways being provided with a suitable contour, the elements 2 and 5 may be brought to port and starboard respectively of the hatchway while at the same time the elements 3 and 4 are also caused to assume a horizontal position resting flat upon the elements 2 and 5. The elements 2 and 5 may then be supported for example by means of collapsible stays or brackets 14.

The structure will then have assumed the shape of a platform on which cargo may be placed prior to lowering it into the hold and on which also the ship-loading hands may stand. This platform is not appreciably space-consuming in a horizontal direction since its width is only a quarter of that of the hatchway which in itself is never very wide.

To close the hatches the procedure is similar, the hatch-cover elements being pulled inwardly of the hatchway by means of a loading-pole or derrick engaging the hooks 13. The elements reach the end of their displacement as they attain a horizontal position.

Water-tightness is obtained by means of rubber seals 15, 16 disposed both over the hatch-coamings 8 and at the joints between the respective elements. The seal used in this connection

may advantageously comprise a seal of the well-known type known commercially as the MacGregor-Comarain seal.

The pins of the hinges 7 and 9 are so disposed that the seal will reach its compressed condition by a movement in a direction perpendicular to the surface. Said seals have been shown in detail in Figs. 2 to 7. Thus for instance Fig. 3 illustrates a seal 15 engaging the upstanding edge 18 of the hatch-coaming 8. The seal 16 between the hatch-elements 2 and 3 is slightly inclined, is secured to the element 3 and cooperates with a sheeting element 19 forming part of the adjacent element 4. Fig. 4 shows a similar seal 15 placed between two intermediate hatch elements interconnected for instance by a latching means 20.

As stated previously, the arrangement shown in Fig. 1 relates to the case where the hatchway is of such length as to require the use of an intermediate cross-beam or support 6. This supporting beam is preferably removable and rests on the hatch-coaming through a suitable seal. The obtaining of a water-tight seal between the coaming 8 of the hatchway 1, the removable cross-beam 6 and the hatch element 2 or 5 involves the provision of a seal between three separate elements, a problem which has already been adequately solved in the ship building art. After the hatches have been closed the hatch-elements are held firmly in position by means of the laterally-disposed securing attachments 22.

It will be noted that the procedure for working the hatches involves opening the hatch-section 3 before the section 4. For this purpose, it is merely necessary to operate the rollers of section 3 after first having disengaged the latches 20 and pulled back the section 2. If it were desired to open the section 4 before the section 3, it would be necessary to pull the section 3 slightly to one side by means of the hook 13.

It should be distinctly understood that the invention is in no way limited to the specific forms of embodiment and details of construction illustrated and described, and that various alterations, omissions and additions may be made therein, therefrom and thereto without exceeding the scope of the invention as defined in the ensuing claim.

What we claim is:

In combination with a deck structure having a hatch opening and a coaming surrounding the opening, a hatch cover construction comprising a plurality of rectangular cover elements arranged in two series, overlying the hatch opening, each series comprising two cover elements which are disposed in side by side relation and are hinged at their adjoining side edges for movement from a closed position in coplanar side by side abutting relation to an open position one on top of the other, one of the cover elements of each series having its other side edge disposed adjacent one side of the hatch opening, arms upstanding from the coaming at each side of the hatch opening and disposed in vertical planes, means carried by the other side edge of each of said cover elements pivotally attached to said arms so that the said cover elements of each series are movable 180° from a closed horizontal position inboard of the hatch opening to an open horizontal position outboard of the hatch opening, roller means carried by the second cover element of each series, guide

means for said roller means disposed transversely of the cover elements and including horizontal center sections, horizontal end portions which lie in a parallel plane above the center sections and inclined sections joining said center sections and end portions, said rollers means moving on the guide means to raise the said second cover elements of each series above the first cover elements as the first cover elements swing 180° from a position inboard of the hatch opening to a position outboard of the hatch opening and carry the second cover elements of each series which swing 180° and are raised by the cooperating roller means and guide means to rest on top of the first cover elements and supporting means carried by the coaming for supporting the cover elements of each series in horizontal platform defining positions projecting laterally from the hatch opening and completely outboard thereof.

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