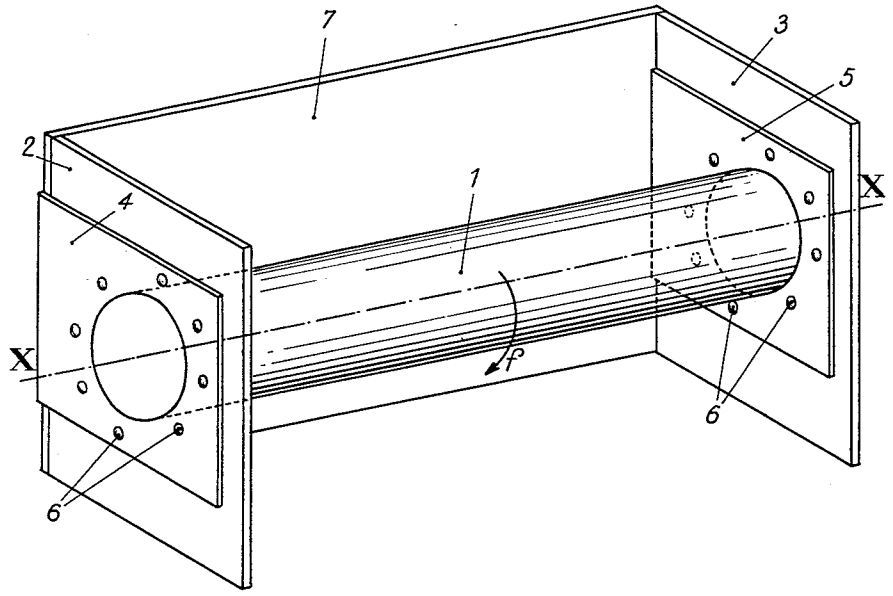
May 29, 1956 H. KUMMERMAN 2,747,537

SHIPHOLD MOUNTING OF ELEMENTS ADAPTED TO WORK UNDER TORSION STRESS

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FIG. 1



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FIG. 2

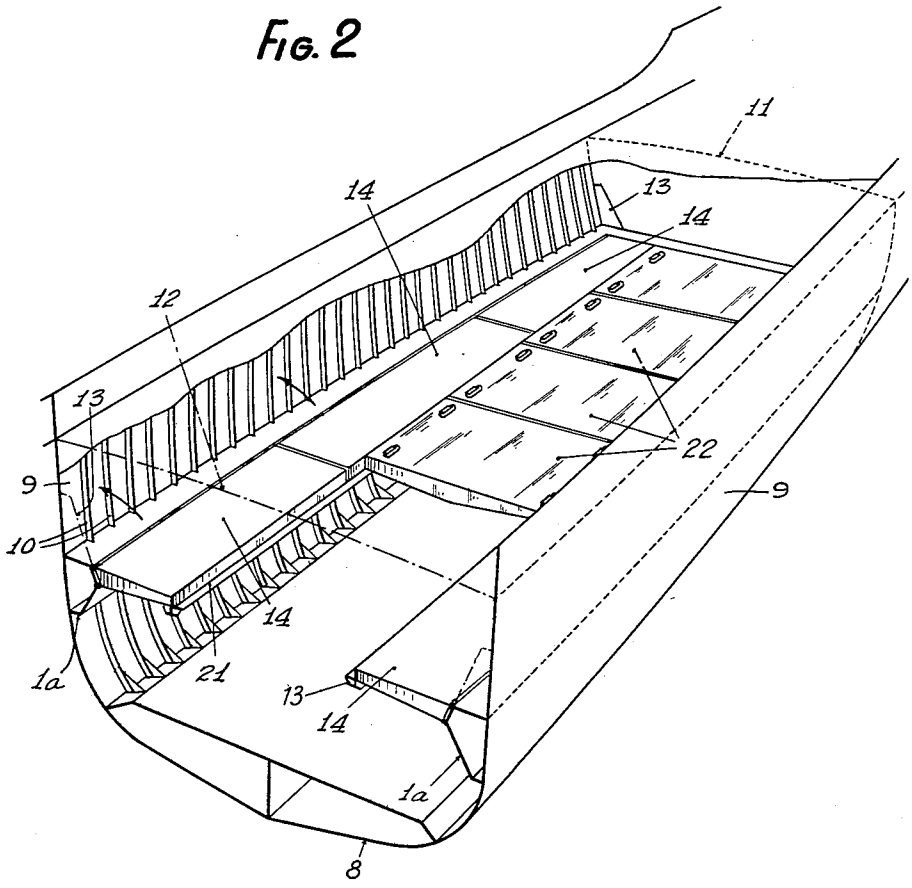
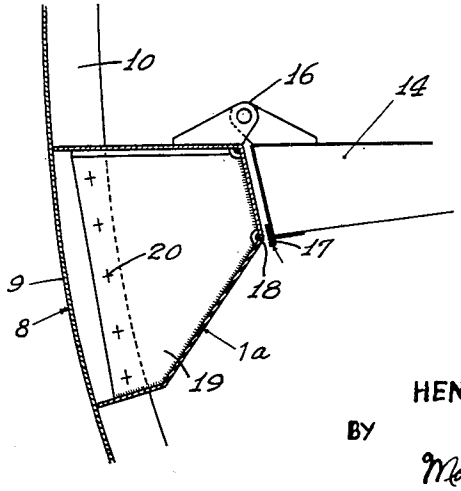


FIG. 3



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SHIPHOLD MOUNTING OF ELEMENTS ADAPTED TO WORK UNDER TORSION STRESS

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Application November 18, 1952, Serial No. 321,127

Claims priority, application France March 13, 1952

4 Claims. (Cl. 114—79)

This invention relates to improvements in the construction of floors, platforms and the like structural assemblies and is particularly directed to a novel and improved platform structure for a ship.

In accordance with the conventional manner of constructing a platform or deck in a ship's hull, the platform members or sections are directly secured, either rigidly or hingedly to the walls of the hull of the ship, brackets or gussets being used to secure the platform sections to the walls of the hull. Such a construction results in the transmission of bending stresses to the hull when vertical loads are placed on the platform sections.

The primary object of the present invention is to provide a mounting arrangement for such platform or deck sections whereby the hull is free from receiving any undue bending stresses as a result of vertical loads placed on the platform sections.

Another object of this invention is to provide a supporting beam for the platform sections and to mount such a beam between adjacent, transverse bulkheads in the ship's hull so that the beam extends alongside but is spaced from the wall of the hull and supports the platform sections in a manner so that any torsion stresses, imposed on the beam by loads on the platform sections, are transmitted to the bulkheads and the hull itself is free from receiving bending stresses as a result of such loads.

Generally stated, the present invention comprehends the mounting of a tubular beam in a position extending longitudinally alongside the wall of a hull by fastening the ends of the beam to a pair of adjacent, longitudinally spaced, transverse partitions or bulkheads in the hull. The beam is free of attachment to the wall of the hull and supports the platform sections, which are preferably hinged thereto. The sections are preferably hinged for vertical swinging movement from raised vertical positions to lowered horizontal positions. In such latter positions, cooperative abutment means is provided between the beam and the platform sections. To prevent deflection of the beam and to maintain it straight, supports extend laterally from the wall of the hull and are positioned transversely within the beam so that the beam can rest thereon but such supports carry no torsion stresses and such torsion stresses, which build up in beam, are transmitted to the bulkheads.

These and ancillary objects and advantages are attained by this invention, the preferred form of which is set forth in the following description and illustrated in the attached drawings, wherein:

Fig. 1 is a diagrammatic illustration of the principle underlying the present invention and shows the manner of mounting a beam so that it is capable of withstanding torsion stresses;

Fig. 2 is a fragmentary perspective view of a ship's hull with parts broken away and shown in section to illustrate the mounting arrangement of this invention for the platform sections, and,

Fig. 3 is a detailed cross-sectional view of the beam showing the structural details thereof and the manner of securing the platform sections to the beam.

Referring now more particularly to the attached drawings, attention is first directed to Figure 1 for an understanding of the principle underlying the invention. In Fig. 1, numeral **1** designates an elongated tubular beam which is shown as circular in cross-section but which can be of any desired cross-sectional shape depending upon the location in which it is to be mounted (see Figs. 2 and 3 wherein the beam **1***a* is of a modified tubular cross-sectional shape having top and bottom portions and at least one side wall portion). The beam **1** is fastened at its ends to plates **2** and **3** which act as supporting members and which project laterally from a supporting wall **7**. The end of the beam may be embedded in the plates, if desired. Reinforcing plates **4** and **5** abut and embrace the beam and are fixedly superimposed on the inner faces of the plates **2** and **3** by rivets **6** or any other suitable fastening means. As shown in the drawing, torsion stresses applied to the beam in the direction of the arrow *f* will be transmitted by the beam to the plates **2** and **3** along the axis of twist or torsion X—X. Thus, any shearing stresses will be applied to the supporting members, constituted by the plates **2** and **3**.

In Figs. 2 and 3, the application of the above structural principle in the construction of a platform or deck for the hull of a ship is shown. As shown in Figs. 2 and 3, the hull **8**, which is of conventional construction, is composed of side walls **9** having vertical rib elements **10** on their inner surfaces. Bulkheads or partitions **11** and **12** (shown in dotted lines) extend transversely between the side walls and are longitudinally spaced apart.

The beam **1***a* extends longitudinally along the inside of the walls **9** and is fastened at its ends to the bulkheads **11** and **12**. The beam is notched out to receive the rib elements and is out of contact with the walls. The beam **1***a* is mounted in the manner shown in Fig. 1 or in a similar manner so that its ends are secured to the bulkheads, which may, if necessary, be rigidified by gussets **13**.

Platform sections or panels **14**, which form the platform **15** are carried by the beam and are secured thereto. Preferably, the sections **14** are hinged to the beam by hinge means **16** so that they can be positioned in raised vertical positions resting on top of the beam or in lowered horizontal positions, as shown in Fig. 3. As shown therein, the lower edge **17** of the inner hinged side of the platform sections abuts against a bearing surface **18** defined by the lower edge of the outer side of the beam.

The beam **1***a* has its open side facing the walls **9** and plates **19** project laterally from the wall and are disposed transversely within the beam. The plates **19** are welded, as at **20**, to certain of the ribs **10** or may be otherwise fastened thereto. The plates fit within the beam **1***a* and are disposed transversely thereof. The plates **19** do not receive any torsional stress from the beam, such stresses being entirely transmitted to the bulkheads. The plates **19** are provided to ensure against buckling or deflection of the beam and the distance of span of the beam will determine the number of such plates **19** to be provided. The plates are of a shape complemental to the interior cross-sectional shape of the beam **1***a*.

The platform sections or panels **14** are formed, at their longitudinal inner side edges, with lips or flanges **21** that are provided to support removable center sections **22**. Thus, when the hinged sections or panels **14** at each side of the hull are in lowered horizontal positions, the sections support the center sections **22**.

What I claim is:

1. In a shiphold having side walls and partitions secured transversely between said walls and disposed in longitudinally spaced relation; a platform structure comprising a beam extending alongside at least one of the side walls in unattached relation therewith and secured solely at its ends to a pair of adjoining partitions, said beam having top and bottom portions, a platform section hingedly secured to the beam and disposed at the inner side thereof, hinge means securing said section to the beam for movement of the section from a raised vertical position resting on top of the beam to a lowered horizontal position extending laterally inwardly from the beam, cooperative abutment means on the beam and the section supporting the section in a horizontal position and supporting means extending laterally inwardly from said side wall and disposed intermediate and immediately adjacent said top and bottom portions and in unattached relationship therewith to prevent deformation of the beam, said beam transmitting all torsional stresses imposed thereon by loads on the platform section, when such section is in a horizontal position, to the partitions.

2. A platform structure as claimed in claim 1, wherein the ends of the beam are embedded in the partitions.

3. In a shiphold having side walls and partitions secured transversely between the side walls and disposed in longitudinally spaced relation; a platform or deck structure comprising a channel beam extending alongside the inside of the side walls in unattached relation therewith and secured solely at its ends to adjoining partitions said beams having top and bottom portions and an inner side portion spaced from the said walls, a plurality of adjoining side platform sections secured in end to and adjoining relation to the beams, hinge means securing the side platform sections to the beams for movement thereof from raised vertical positions resting on top of the beams to lowered horizontal positions

extending laterally inwardly from the beams, cooperative abutment means on the inner side portions of the beams and on the side platform sections for supporting the side platform sections in horizontal positions, supporting elements secured to the side walls and extending laterally inwardly from the side walls and disposed intermediate the top and bottom portions of the beams and in immediate adjacency to the top and bottom portions and the inner side portions and in unattached relationship therewith to prevent lateral and vertical deformation of the beams, said beams transmitting all torsional stresses imposed thereon by loads on the side platform sections, when the sections are in horizontal positions, to the partitions.

4. A platform structure as claimed in claim 3, wherein said side platform sections have inner side edges formed with means providing seats and removable center platform sections detachably seated on said seats when the side platform sections are in lowered horizontal positions.

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