Feb. 12, 1963 R. O. AARVOLD 3,077,225

SHIP'S HATCH COVERS COMPRISING TWO SECTIONS FOLDABLY CONNECTED TO EACH OTHER

Filed Dec. 27, 1960

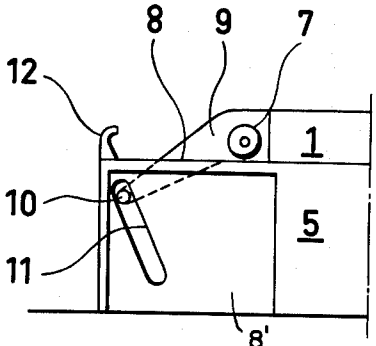


FIG. 2

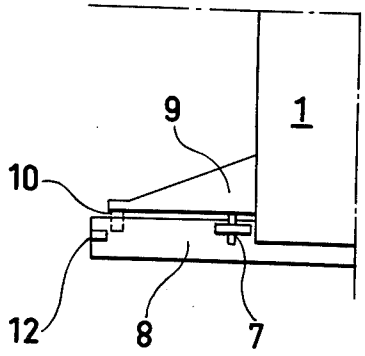


FIG. 4

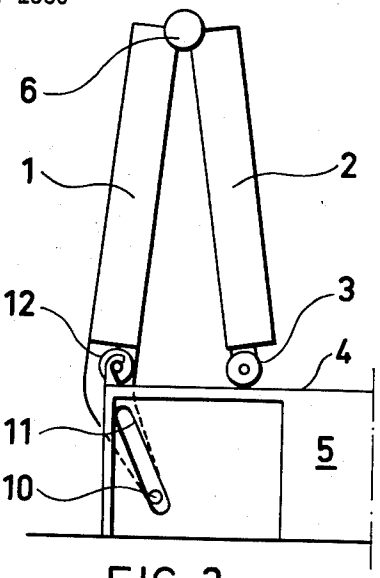


FIG. 3

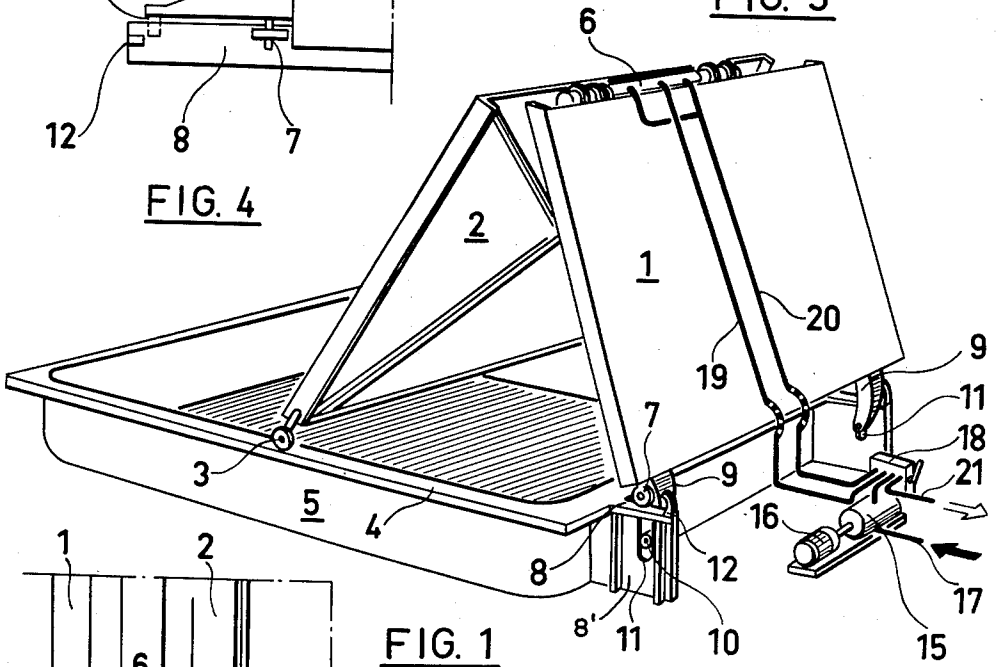


FIG. 1

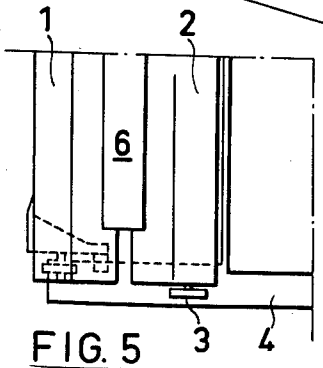


FIG. 5

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SHIP'S HATCH COVERS COMPRISING TWO SECTIONS FOLDABLY CONNECTED TO EACH OTHER

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2 Claims. (Cl. 160—188)

The present invention relates to an arrangement for closing ship's hatchways and comprises a primary section swingably connected in relation to one end of the coaming and a secondary section foldably connected to the first one. The secondary section is during the opening and closing movement supported by wheels at its outer end, running on tracks arranged along the sides of the coaming. In order to make a complete uncovering of the hatch opening possible in hatch covers of this type, it is usual to connect the primary section to the deck by means of hinges, in which the hinge arms are long enough to allow the folded sections to be placed between the hinge centre and the end of the coaming. This will partly lead to that the sections in stowed position extend high above the coaming, thus on many occasions being inconvenient to the crew operating the cargo handling gear, and partly more power will be required from the apparatus operating the hatch covers. The last-mentioned disadvantage is more appreciable with hatches, in which the maneuvering apparatus is carried by the section.

An essential improvement can be attained if the primary section at its outer edge is supported by slideable carrying members, that tracks for said members are arranged outside the swinging side of the coaming, and that the primary section is provided with bars reaching outside said members, the ends of said bars having suitable trunnion pins adapted for co-operation with fixed guiding slots below said tracks, the relative shape and position of said slots and tracks being such, that the members are pressed outwards the coaming upon an upwardly tilting movement of the primary section and vice versa.

In the accompanying drawing some details of an embodiment according to the invention as applied to a hold hatch of a large ship are shown by way of example.

FIGURE 1 shows a perspective view of the opening with the covers in partly open position.

FIGURE 2 shows a slight modification at a corner of the hatch near to the swinging axis with the sections in closed position.

FIGURE 3 shows the same view with the sections in nearly stowed position.

FIGURE 4 shows a plan view of the detail in FIGURE 2.

FIGURE 5 shows a plan view of the detail in FIGURE 3.

The closing assembly comprises a primary section **1** and a secondary section **2** foldably connected to the first one. Section **2** is in a manner known per se provided with wheels **3**, which are adapted to run on a first set of tracks **4** arranged in connection to the sides **5** of the coaming. Both sections are hingedly connected to each other and carry a hydraulic maneuvering system, containing a working motor **6**. By the aid of this apparatus it is possible to perform the desired opening and closing movements.

The hydraulic system comprises a pump **15** driven by a suitable motor **16**. Oil is supplied from a store tank through a pipe **17** and is under pressure led to a distribution control member **18**, by means of which it is directed through either of two conduits **19** or **20** to the actual working motor **6**. The other of said pipes then

acts as a return flow conduit and the oil is finally lead back to the tank by way of a pipe **21**.

The primary section rests near to its outer edge on two wheels **7**, which serve as pin members of pivots. These wheels run on a second set of tracks **8**. As shown in FIGURES 2 to 5 these tracks may be an extension of the tracks **4** along the sides of the coaming, but they may as shown in FIGURE 1 be arranged separately, at some distance from the corners of the opening. The primary section is also provided with two bars **9** extending outside the wheels and the outer ends of the bars are equipped with trunnion pins **10**. These co-operate with guiding slots **11** arranged in vertical support members **8'** for the tracks **8**, and are arranged in such a manner, that the trunnion pins, when section **1** is swinging on the wheels **7**, press these wheels and also the two sections outwards from the coaming. During the opening movement the swinging centre thus all the time moves outwards in the plane of the coaming. At the end of each track **8** there is a stop member **12** preventing a further movement outwards. The track **8** has such a length that both sections in stowed position will wholly be situated outside the hatchway and thus the entire opening is uncovered. In a construction of ordinary type the trunnion pins **10** would correspond to the hinge pins and be fixed in the position shown in FIGURE 1. In such a case it had been necessary to turn the whole hatch assembly on this centre.

Within the scope of the appendent claims the details of the invention may be varied. The maneuvering apparatus may comprise any hydraulic, pneumatic or electric apparatus carried by the sections and intended to operate the same. The two sections can be arranged to cover a whole hatch opening, but in very long openings it can be suitable to arrange a pair of sections at each of the opposite ends of the opening. In this case a sealing may be provided between the secondary sections adjacent to each other. The swinging centre is usually arranged in the ship's transverse direction, but in ships of a certain type, for instance bulk carriers, it can be suitable to have the swinging-centre in the longitudinal direction in order to allow the cargo handling gear, laterally to reach into the holds at the same time giving the watch-officer opportunity to survey all the hatchways from the bridge. The extended tracks **8** can be designed with a slope in relation to the horizontal plane and the slot **11** will in conjunction therewith be shaped in such a manner, that the desired movement of the sections can be attained with a minimum of power-consumption.

What I claim is:

1. In a ship having a deck with a hatch opening therein, a coaming surrounding said hatch opening and a sectional hatch cover adapted to co-operate with said coaming, said cover comprising a primary section swingably mounted in relation to one end of the coaming and a secondary section foldably connected to the primary one, a maneuvering apparatus carried by the sections and working thereon for obtaining opening and closing movements, a first set of tracks extending along the sides of the coaming, wheels at the outer ends of said secondary section adapted to run on said first set of tracks, slideable carrying members at the swinging side of the primary section, a second set of tracks outside of the corresponding side of the coaming said slidable carrying members being adapted to run on said second set of tracks, and being arranged mainly at the same level as the tracks and having a length corresponding to the depth of the sections when folded together, the primary section being further provided with bars reaching outside said carrying members and having trunnion pins at their ends for co-operation with fixed guiding slots below said second set of tracks, the relative shape and position of said second set of tracks and said slots being such, that the

members are pushed outwards from the coaming, over a distance corresponding to said folded depth of the sections, upon an upwardly tilting movement of the primary section, and vice versa.

2. A ship's hatch cover according to claim 1, in which said slot is arranged in a support member for each of the secondary tracks, said support member resting directly on said deck.

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