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DRAWINGS ATTACHED

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(54) A HATCH COVER

(71) We, NAVIRE CARGO GEAR AB., of Gustaf Dahlensgatan 8, Goteborg, Sweden, a Swedish Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a hatch cover.

With hatch covers comprising three or more interconnected cover sections difficulty is encountered in moving the sections to and from a ramp, where the sections are stowed when the hatch is open. It is comparatively simple to handle a pair of sections, but a third section complicates the picture and usually requires the same number of appliances as a pair of sections for movement thereof to or from the ramp. There have, however, been proposed arrangements where the third section is operated by means of a wire to follow the movements of the first mentioned two sections.

It has been known to operate two interconnected sections by means of straight, double acting rams fitted between the first section and an adjacent side of the coaming.

The present invention provides a hatch cover comprising at least three pivotally interconnected sections, one end portion of a first of said sections being pivotally connected to one end of the coaming surrounding the hatch opening, a pressure fluid operated ram attached between the first section and a side of the coaming, a guided member mounted on one end of the ram and movable in guide means on a side of the first section, a first pulley mounted on the guided member and a second pulley mounted on said first section adjacent the pivotal connection between said first and the second of said sections, and a wire, one end of which is connected to the first section at a position between said first and second pulleys, said wire being guided respectively over the second pulley then the first pulley and again the second pulley, its other end being connected to the third section at a position towards the end of the third section remote from the pivotal connection between the second and third sections, the ram being in a contracted position when the cover is closed so that when the ram is extended the first and second sections are raised into a folded together vertical position and whereby subsequent contraction of the ram will increase the distance between the first and second pulleys thereby raising the third section into a vertical position adjacent to the first and second sections.

In this specification "wire" means any longitudinal flexible member such as a cord, wire, cable, rope or the like suitable for the purpose as described herein.

The invention will now be described, by way of example, with reference to the accompanying drawings, in which:—

Figure 1 shows a hatch cover comprising three sections in a closed position;

Figure 2 shows the cover in an intermediate position during opening or closing movement thereof;

Figure 3 shows the cover in a fully open position.

The cover comprises three sections 10, 11 and 12, of substantially the same size, which rest upon a coaming shelf surrounding a hatch opening. The sections are interconnected by hinges 13 and 14 located below upper surfaces of the sections. The section 10 is pivotally connected at 15 to a coaming shelf.

Sections 10 and 11 are operated by means of a pressure fluid ram 16 mounted at each longitudinal side of the coaming shelf. By means of the rams 16 sections 10 and 11 can be moved to a stowed position at one transverse side of the hatch shelf.

Each ram 16 has a piston rod 17 which at a free end thereof is provided with a guide member for movement in an elongate slot 18 in a side of the section 10, the guide member including a pintle 19 onto which a first pulley 20 is journalled.

A second pulley 21 is mounted upon the section 10 adjacent to the hinge 13. One end of a wire 22 is attached at a point 23 between the two pulleys 20 and 21 and is

from this point guided over the second pulley 21 and first pulley 20, then back over the second pulley 21 and finally extends to the section 12 to which it is attached at a point 24, towards the edge of the section 12 remote from the hinge 14.

The section 11 is provided with a pair of wheels 25 co-operating with runways along the longitudinal sides of coaming shelf, the wheels 25 running up a ramp portion 27 of the coaming shelf when the cover is moved into a closed position. The section 12 is provided with two pair of wheels 26 both pairs cooperating with the same runways, when this section is at rest in a folded-down position.

As is shown in Figure 1, the pintle 19 at the end of piston rod 17 rests in the end of the slot 18 remote from the hinge 15 when the cover is in a closed position. The rams 16 operate in a conventional manner during manoeuvering of the sections 10 and 11. The section 12 is during folding movement of the sections 10 and 11, moved horizontally along the coaming shelf, and the wire 22 extends between the second pulley 21 and the point of attachment 24 as shown in Figure 2, the distance between the pulleys 20 and 21 remaining unchanged.

When the sections 10 and 11 have reached the position shown in Figure 2, the ram is contracted whereby pulley 20 is moved away from the fixed pulley 21. The portion of the wire between the two pulleys is thereby extended and the section 12 is raised to the position shown in Figure 3.

The lowering of the sections is brought about by repeating the steps referred above in a reversed order. In order to ensure that the section 12 will be lowered first, it may be appropriate to retain the sections 10 and 11 in a vertical position by means of a locking device until the section 12 has been lowered completely. The rams are also used for braking the unfolding movement of the sections 10 and 11 and the guide members on the piston rods should have reached the ends of slots 18 before the last step of the closing movement is initiated.

WHAT WE CLAIM IS:—

1. A hatch cover comprising at least three pivotally interconnected sections, one end portion of a first of said sections being pivotally connected to one end of the coaming surrounding the hatch opening, a pressure fluid operated ram attached between the first section and a side of the coaming, a guided member mounted on one end of the ram and movable in guide means on a side of the first section, a first pulley mounted on the guided member and a second pulley mounted on said first section adjacent the pivotal connection between said first and the second of said sections, and a wire, one end of which is connected to the first section at a position between said first and second pulleys, said wire being guided respectively over the second pulley then the first pulley and again the second pulley, its other end being connected to the third section at a position towards the end of the third section remote from the pivotal connection between the second and third sections, the ram being in a contracted position when the cover is closed so that when the ram is extended the first and second sections are raised into a folded together vertical position and whereby subsequent contraction of the ram will increase the distance between the first and second pulleys thereby raising the third section into a vertical position adjacent to the first and second sections.

2. A hatch cover as claimed in claim 1 wherein one of said rams, guided member and guide means, first and second pulley and wire are each provided on opposite sides of the cover.

3. A hatch cover substantially as herein described with reference to the accompanying drawings.

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