The invention relates to a hatch cover system of the type wherein cover sections are hingedly interconnected, with a first section hinged at a point which is hingedly mounted to the ship's deck so that this first section together with the adjacent second section may be pivoted into a vertical position with the lower faces of the two sections facing each other, and a third section which is hingedly connected to the second section may be pivoted to a vertical position with its top face facing the top face of the second section, all movements being effected by hydraulic means mounted between the deck and the first and levers for the third section, respectively, pivotable about a fixed pivot point by a hydraulic means and is provided near its free end with a claw adapted to receive a pin on the third cover section when the first and the second sections are approaching their vertical position, whereby the entire opening and closing operations are under positive guidance of all parts relative to each other and to the deck and the parts are positively held when in open position, all without any noise producing play, and with no part preventing the movements of the remaining parts.

1 Claim, 4 Drawing Figures
FIG. 3.
FOLDING COVER SYSTEM FOR HATCHES

The present invention relates to a folding cover system for hatches aboard ships or the like openings of the type wherein cover sections are hingedly interconnected, with a first section hinged at a point which is solidly connected to the ship's deck so that this first section together with the adjacent second section may be pivoted into a vertical position with the lower faces of the two sections facing each other, and a third section which is hingedly connected to the second section may be pivoted to a vertical position with its top face facing the top face of the second section, all movements being effected by hydraulic means mounted between the deck and the first and levers for the third section, respectively.

In such systems it has been difficult to ensure the movement of the second section and the following section or sections relative to each other and to the hatch coaming, in particular during the initial pivoting movement of the third cover section, as this section, during the raising of the two first sections is drawn along the coaming towards the pivot of the first section. It has been heretofore proposed to use the same hydraulic means for the pivoting of the third cover section and for the pivoting of the two first sections through a lever which is pivotally supported on the deck at one end, the other end being adapted to pivot the third cover section which, for this purpose, is provided with a roller or the like which is supported on the top face of the lever for the purpose of guiding the third section inwardly towards the second section.

Such known systems have been structurally and operationally complicated and do not provide such a positive guidance that noise and wear are avoided.

A system is also known wherein one hydraulic means is applied to every second cover section. The second section of each pair of sections must therefore be held stationary when the operation of the pivot sections means of the first section of the next pair is actuated, as otherwise the second section is also operated by the next following means.

The object of the present invention is a system of the first mentioned type, in which a simple, trustworthy and noiseless movement of all cover sections is obtained.

According to the invention, this is achieved by levers pivotable about a fixed point by a hydraulic means and is provided near its free end with a claw adapted to receive a pin on the third cover section when the first and the second sections are approaching their vertical position.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawings illustrate an embodiment of the system according to the invention.

FIG. 1 is a side view of the system and FIG. 2 a top view with the cover in closed position, as applied to a hatch aboard a ship.

FIG. 3 is a side view of the system, during the opening movement.

FIG. 4 is a side view of the same system, with the cover in open position.

DESCRIPTION OF THE INVENTION

In the drawings, 1 is a hatch coaming and 2, 3, 4 are three sections of a folding cover. The cover section 2 is hinged at one end edge 5 to a post 6 on the deck 7. At each side edge the section 2 is pivotally connected at 8 to a hydraulic piston and cylinder means 9, the other end of which is hinged at 10 to the deck 7.

At the other end edge the section 2 is hinged at 11 to the adjacent end edge of the next section 3 and this section is in turn hinged at 12 to the adjacent end edge of the third section 4. At each end of the end edge 11, the section 3 is provided with a running wheel 13, while the section 4 is provided with a running wheel 14 at each end of its free end edge and with a pin 15, the axis of which is situated somewhat higher in the section than the axis of the running wheel 14.

Further, a hydraulic piston and cylinder means 16 is provided to either side of the hatch coaming 1, one end of the means 16 being hingedly mounted at 17 on the deck 7, the other end being hingedly connected to a lever 18 which is hinged at 19 to a post 20 on the deck. The post 20 is provided with a claw 21 and the lever 18 is provided with a claw 22, the purpose of which is to be explained hereinafter.

Further, to either side of the hatch coaming there is provided a ramp 24 on which the running wheel 14 may run during the initial movement of the opening of the cover. In the closed position of the cover the top face of the ramp 24 is in line with the top face of the lever 18 and this, in turn, forms an inlet to the claw 21 on the post 20.

When the cover sections 2, 3, 4 are in the closing position shown in FIGS. 1 and 2 and the hatch is to be opened, the means 9 is initially actuated, whereby the section 2 is pivot about the hinge 5 (see FIG. 3), thereby dragging along section 3 with the running wheel 13 trailing on the top face of the lever 18. Section 4 is also dragged along, but in approximately horizontal position, its running wheel 14 trailing on the ramp 24 until the running wheel 13 of the section 3 bottoms in the claw 21. At the same time, the pin 15 has engaged the claw 22 on the lever 18. The means 16 is now actuated to the effect that the lever 18 is pivot about its hinge 19 on the post 20 and drags along the cover section 4 (see FIG. 4), while pivoting section 3 relatively to section 4 about the end edge 12. The running wheel 13 is now locked in the claw 21 on the post 20. As illustrated in FIG. 2, the various parts are so correlated in the sideways direction that the ramp 24 is on line with the top face of the lever 18 with a portion 23 for the inlet of the pin 15 to the claw 22 arranged sideways of the lever 18 proper and somewhat raised, relative to the same.

Thus, the entire opening operation is effected under positive guidance of all parts relative to each other and to the deck, and the parts are positively held when in open position, all without any noise producing play, and with no part preventing the movements of the remaining parts.

We claim: 1. A folding cover system for hatch coamings aboard ships or the like openings wherein cover sections are hingedly interconnected, a first of said sections being hingedly mounted at one end thereof to the ship's deck, a second of said sections being hinged at the undersurface thereof to the undersurface of said first section so that when pivoted into a vertical position said undersurfaces face one another, a third of said sections being hinged at the top surface thereof to the top surfaces of said second section so that when pivoted into a vertical

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position said top surfaces face one another, first hydraulic lift means mounted to said deck and to said first section, a lever located along each side of said sections and having a first claw thereon near one end thereof opening toward said third section, said levers each being pivotally mounted at its opposite end to said deck, rollers provided on said second and third sections in rolling engagement with the opposite side coamings of the hatch, the top surface of each said lever forming extensions of said side coaming along which said second section rollers engage during movement of said second section into its vertical position, a second claw mounted as an extension of said top surface of each said lever and opening to said third section, pin elements on said third section extending outwardly of the side surfaces thereof, and second hydraulic lift means mounted on each said lever and to said deck, whereby actuation of said first hydraulic lift means moves said first and second sections into a vertical position while said second section rollers roll along said top surfaces and said third section is moved along said side coamings until said pin elements interengage with said first claws, and whereby actuation of said second hydraulic lift means moves said levers and said interengaged third section into a vertical position and causes said second section rollers to interengage with said second claws thereby acting as a top for said second section during folding, said levers maintaining said section rollers in engagement with said second claws during movement thereof into their vertical position.

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