April 12, 1960 U. J. BEAS 2,932,272

HATCH COVER AND MEANS FOR MOUNTING THE SAME

Filed Nov. 20, 1958 5 Sheets-Sheet 1

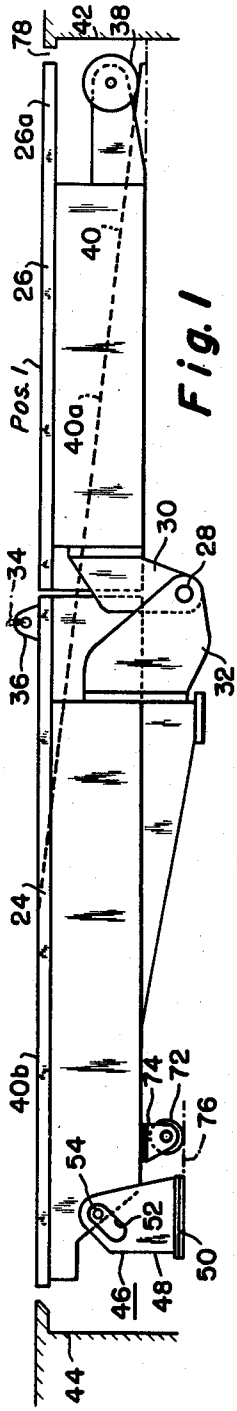


Fig. 1

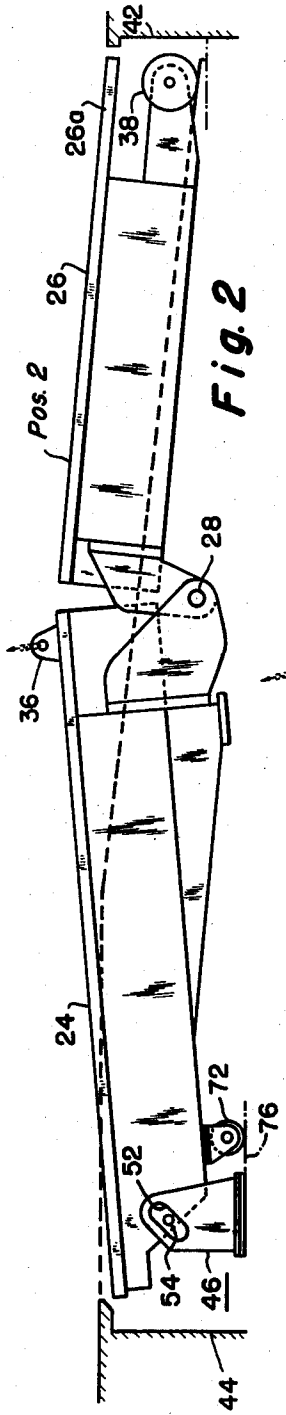


Fig. 2

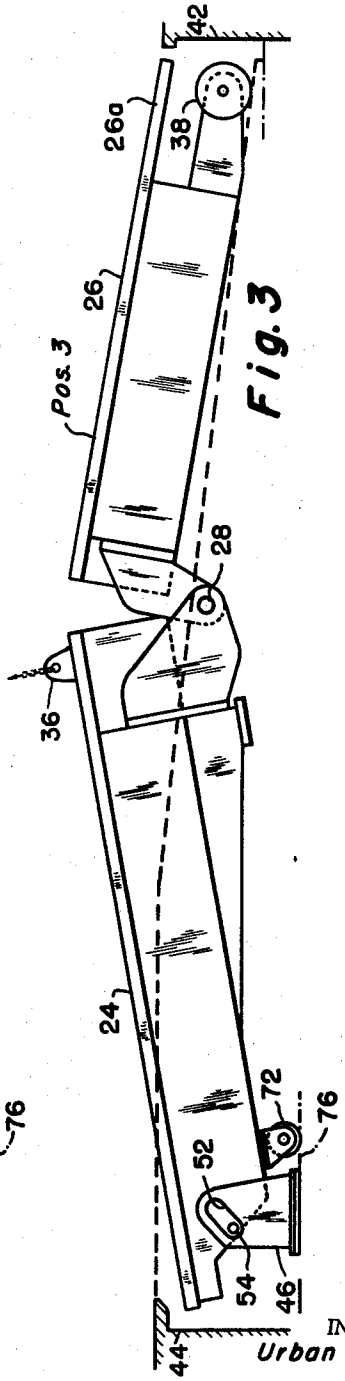


Fig. 3

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HATCH COVER AND MEANS FOR MOUNTING THE SAME

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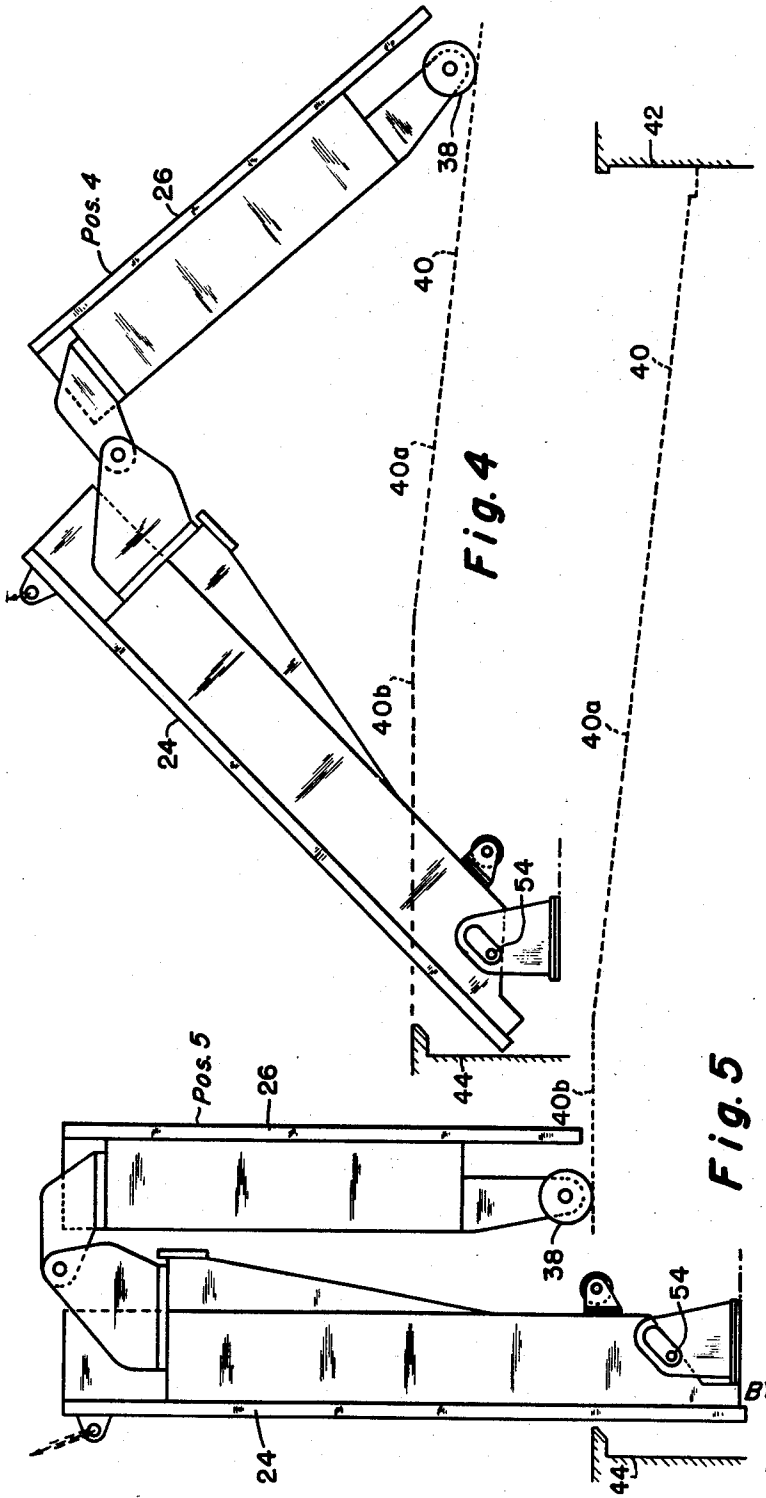


Fig. 4

Fig. 5

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HATCH COVER AND MEANS FOR MOUNTING THE SAME

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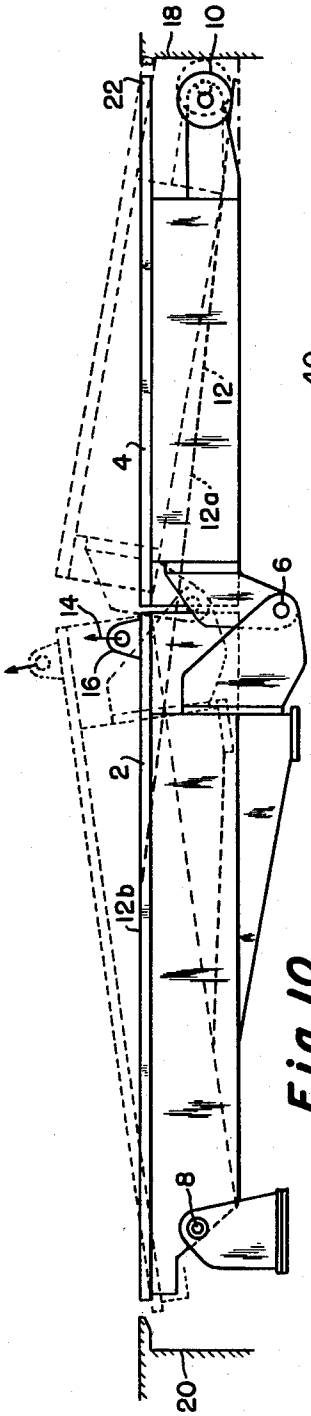


Fig. 10

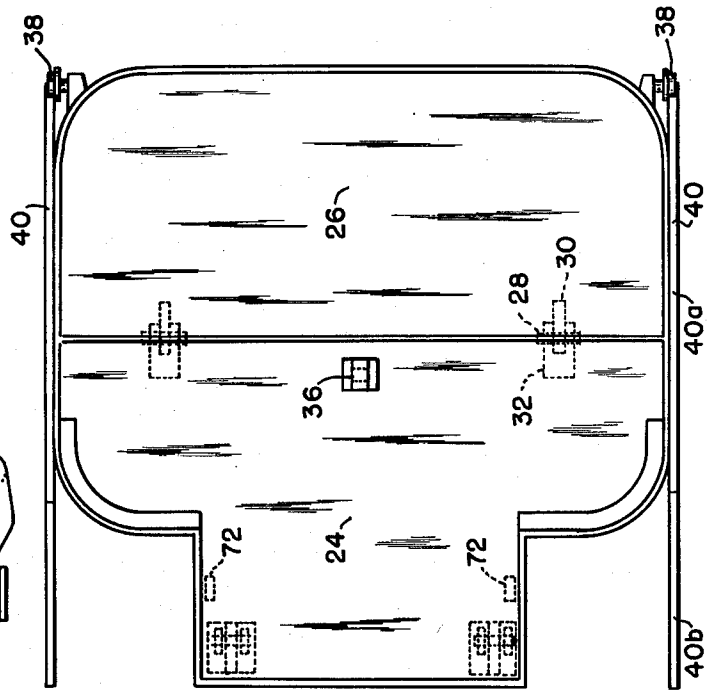


Fig. 6

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HATCH COVER AND MEANS FOR MOUNTING THE SAME

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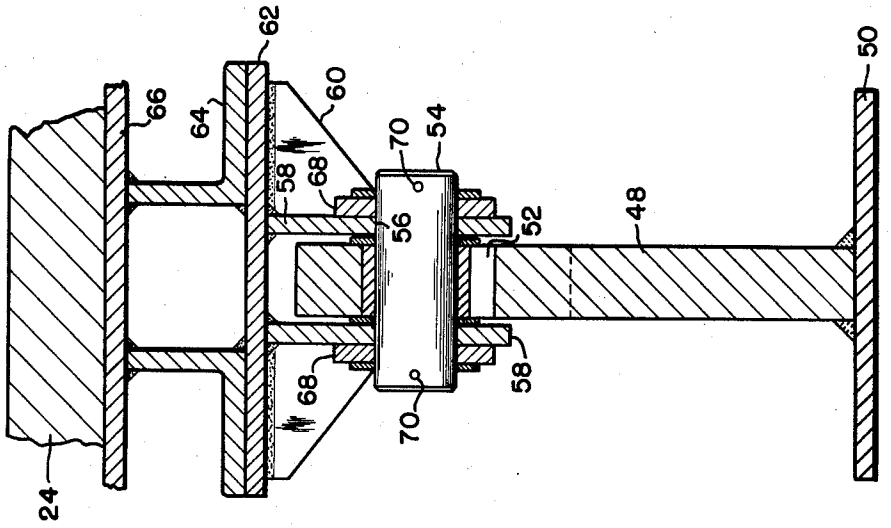


Fig. 8

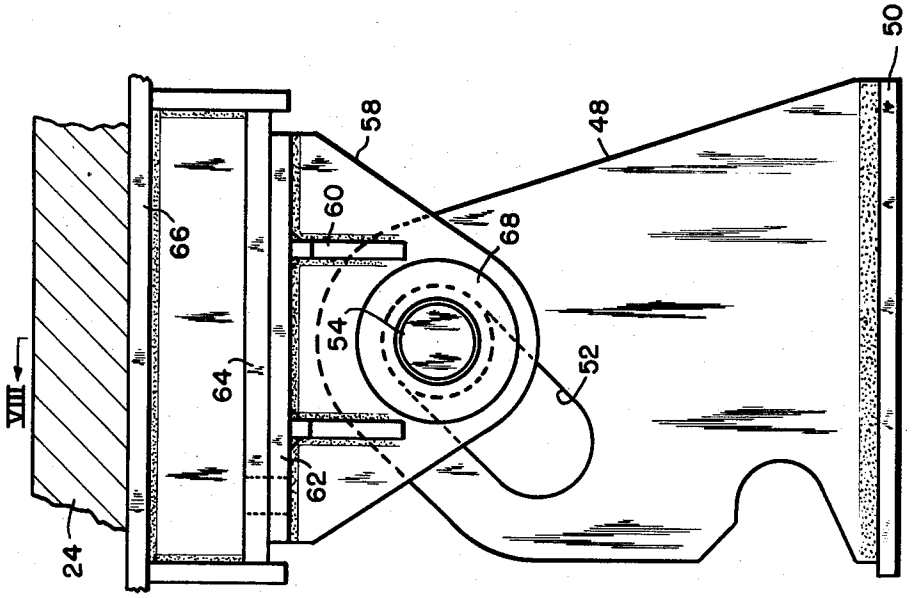


Fig. 7

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HATCH COVER AND MEANS FOR MOUNTING THE SAME

Filed Nov. 20, 1958 5 Sheets-Sheet 5

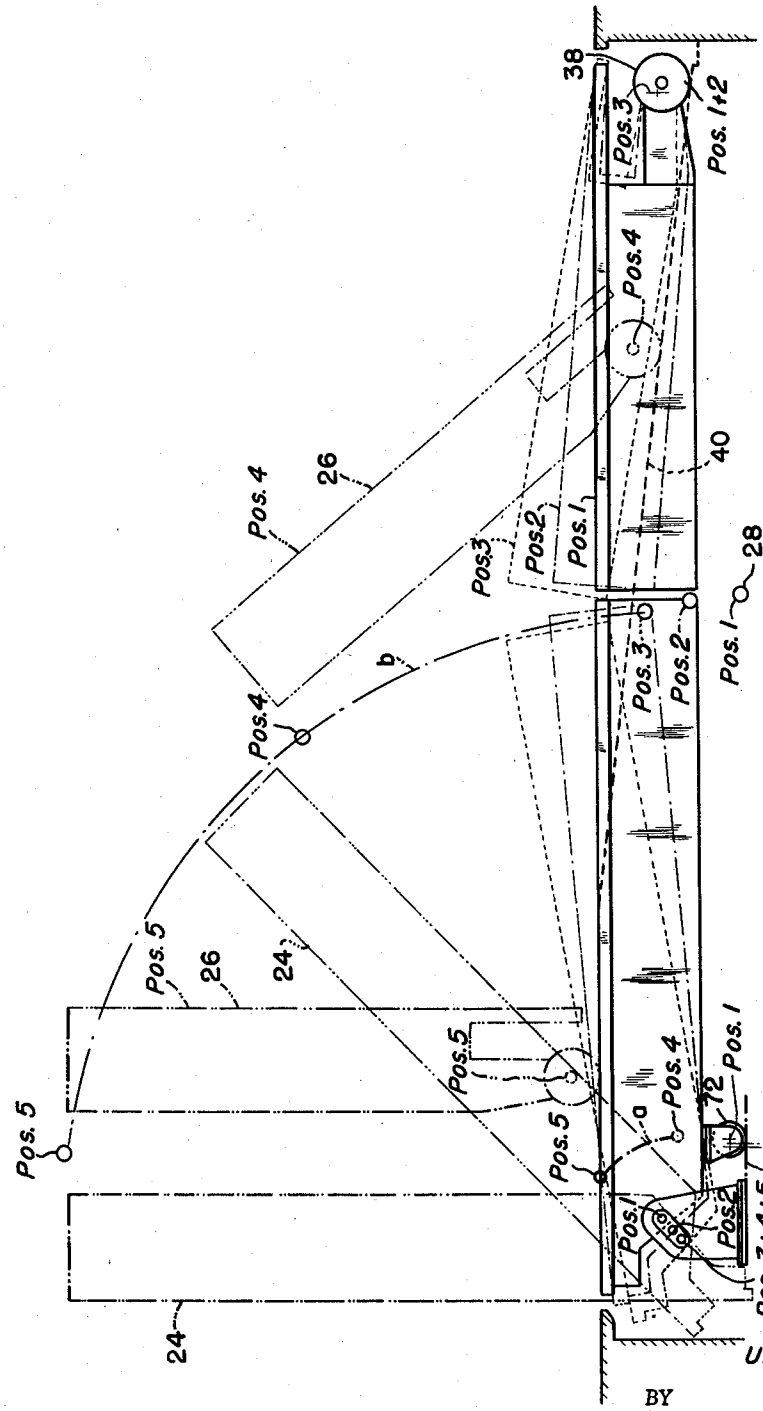


Fig. 9

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United States Patent Office 2,932,272 Patented Apr. 12, 1960

2,932,272

HATCH COVER AND MEANS FOR MOUNTING THE SAME

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Application November 20, 1958, Serial No. 775,283

2 Claims. (Cl. 114—202)

This invention relates to hatch covers and means for mounting the same so that a hatch cover can be moved to cover and uncover a hatchway in a surrounding structure. The hatch cover is made up of a plurality of panels which are pivotally connected to each other at their adjacent ends, one of the panels, at the end opposite the other panel, being pivotally mounted on a supporting structure. Means is provided for raising and lowering the panels. When the panels are raised, they are folded together and extend in a substantially vertical position at one side of the hatchway. When the panels are lowered, they extend in a substantially horizontal direction and cover the hatchway.

In the past, some difficulty has been experienced with hatch covers made up of a plurality of panels which are folded together to uncover the hatchway, this difficulty being that, unless a relatively large clearance is provided between the deck of the ship and the end of the panel farthest away from the point about which the panels are hinged to the deck, there is a likelihood that the end of the panel will contact with the deck of the ship during the early stage of raising the panels or during the late stage of lowering the panels. The present invention overcomes any interference between the panels and the deck by employing a slotted hinge for mounting the panels.

According to the invention, the hatch cover comprises a first panel and a second panel pivotally connected together at their adjacent ends, means for raising and lowering said panels, a hinge element having a slot and being mounted in fixed position adjacent the opposite end of said first panel, a hinge pin secured to said first panel and received in said slot, rails extending along the hatchway and rollers connected to the opposite end of said second panel and adapted to run on said rails. In a preferred form of the invention, a platform is located beneath said first panel and a stop is connected to the underside of said first panel and is adapted to contact said platform upon lowering said panels, thereby causing said hinge pin to ride up in said slot.

In the accompanying drawings which illustrate a preferred embodiment of my invention and also a prior art structure,

Figures 1 through 5 are side elevations of a pair of panels forming a hatch cover mounted according to my invention, the figures showing five different positions of the panels from the fully closed to the fully open positions;

Figure 6 is a plan view of a hatch cover according to my invention, this figure being on a smaller scale than Figures 1–5;

Figure 7 is a side elevation on an enlarged scale of the slotted hinge according to my invention;

Figure 8 is a vertical section taken on the line VIII—VIII of Figure 7;

Figure 9 is a composite diagrammatic view showing the panels in the five different positions labeled "Pos.1–Pos. 5," these positions corresponding respectively to Figures 1–5; and

Figure 10 is a side elevation of a pair of hatch cover panels mounted according to the prior art.

Referring more particularly to the accompanying drawings and for the present to Figure 10 which illustrates a prior known device, the hatch cover comprises two panels 2 and 4 pivotally connected at 6 at their adjacent ends. The opposite end of panel 2 is pivotally mounted at 8 and the opposite end of panel 4 is provided with rollers 10 which run on a rail 12 when the cover is raised or lowered as by means of a chain 14 connected at 16 to the panel 2 or by any other means. The rails 12 have a sloping portion 12*a* and a horizontal portion 12*b*. The cover is located in a hatchway defined by a surrounding structure 18 and 20 which may be a ship's deck. A disadvantage of this known structure is that when the hatch cover is of a size to fit closely within the hatchway when the panels are in horizontal position, the end 22 of the panel 4 interferes with the deck 18 during the early stage of raising the cover or during the late stage of lowering the cover, as is illustrated in dotted lines in Figure 10. This interference is avoided in accordance with my invention.

Referring now to Figures 1–9, which illustrate the present invention, the cover comprises two panels 24 and 26 which are pivotally connected together at their adjacent ends by hinge pins 28 fitting in hinge elements 30 secured to the panel 26 and hinge elements 32 secured to the panel 24. Means is provided for raising and lowering the panels. As illustrated, a chain 34 secured to a lug 36 on the panel 24 may be used for this purpose. The end of panel 26 opposite panel 24 is provided with two rollers 38 which run on rails 40 located along the sides of the hatchway. Each of the rails 40 has an inclined portion 40*a* and a horizontal portion 40*b*. The cover is located within a hatchway defined by a deck portion 42 and a deck portion 44.

The end of the panel 24 which is opposite the panel 26 is mounted in a slotted hinge assembly indicated generally by reference numeral 46, this slotted hinge assembly being shown in more detail in Figures 7 and 8. A post 48 is mounted on a fixed support 50 and the post is provided with a slot 52 which extends upwardly and to the right as viewed in Figure 1. The slot 52 receives a hinge pin 54 which extends through an opening 56 in each of two legs 58 connected to a bracket 60 secured to a support 62. The support 62 is connected by angles 64 to a member 66 forming a part of the panel 24. The hinge pin 54 extends through openings in the bosses 68 formed on the hinge legs 58 and is secured in place by pins 70. From the above, it is evident that the panel 24 carries a pin 54 which is received in the slot 52 formed in the post 48. Rollers 72 are carried by brackets 74 which are secured to the underside of the panel 24. The rollers run on a platform 76.

The operation of my device is as follows.

As the panels are raised by lifting the chain 34 or by any other suitable means, the panels assume the various positions shown in Figures 1–5, which positions are also shown in Figure 9. As the cover starts to open from Position 1, the hinge pin 54 rides down in the slot 52 from the position shown in Figure 1 to the position shown in Figure 2 and then to the position shown in Figure 3 at which the hinge pin is at the bottom of the slot. During movement of the panels from Position 1 through Position 2 to Position 3, the rollers 38 roll only slightly on the inclined portion 40*a* of rails 40. During this same portion of the cover movement, roller 72 rests on platform 76 and rolls slightly toward the hinge 46. During the remainder of the opening cycle, i.e., when the pan-

els are moving from Position 3 through Position 4 to Position 5, panel **24** pivots about hinge **54** while that hinge pin is at the bottom of the slot **52**. As the panels leave Position 3 in their movement towards Positions 4 and 5, the roller **72** leaves the platform **76** and describes the arc *a* shown in Figure 9. During this same movement of the panels, pin **28** describes the arc *b* shown in Figure 9.

In lowering the cover, panel **24** pivots about hinge pin **54** while the hinge pin is at the bottom of the slot **52** until Position 3 is reached. At Position 3, as shown in Figure 3, roller **72** contacts platform **76**, thereby forcing hinge pin **54** to ride up in slot **52** causing roller **72** to roll slightly to the right as viewed in Figure 9 from Position 3 through Position 2 to Position 1.

As is evident from the above description, as the cover moves from Position 1 through Position 2 to Position 3, the hinge pin **54** rides down in the slot **52**, thereby moving both panels **24** and **26** toward the left as viewed in Figure 1 so that there is no interference between the end **26***a* of panel **26** and the deck portion **42**. Also, as is evident from the above description, as the cover is lowered from Position 3 through Position 2 to Position 1, the hinge pin **54** rides up in the slot **52**, thereby moving the panels **24** and **26** to the right so as to leave only a small gap **78** between the end **26***a* of panel **26** and the deck portion **42**.

The invention is not limited to the preferred embodiment but may be otherwise embodied or practiced within the scope of the following claims.

I claim:

1. A hatch cover and means for mounting the same so it can be moved to cover and uncover a hatchway in a surrounding structure, which comprises a first panel and a second panel pivotally connected together at their adjacent ends, means for raising and lowering said panels, a hinge element having a slot and being mounted in fixed position adjacent the opposite end of said first panel, said slot sloping upwardly and toward said second panel, a hinge pin secured to said first panel and received in said slot and adapted for moving therein during the lowering and raising movements of said panels, rails extending along the hatchway, rollers connected to the opposite end of said second panel and adapted to run on said rails, a platform located beneath said first panel, and a stop connected to the underside of said first panel and adapted to contact said platform upon lowering said panels, thereby causing said hinge pin to ride up in said slot.

2. A hatch cover and means for mounting the same so it can be moved to cover and uncover a hatchway in a surrounding structure, which comprises a first panel and a second panel pivotally connected together at their adjacent ends, means for raising and lowering said panels, a hinge element having a slot and being mounted in fixed position adjacent the opposite end of said first panel, said slot sloping upwardly and toward said second panel, a hinge pin secured to said first panel and received in said slot and adapted for moving therein during the lowering and raising movements of said panels, rails extending along the hatchway, rollers connected to the opposite end of said second panel and adapted to run on said rails, a platform located beneath said first panel, and a roller connected to the underside of said first panel and adapted to contact said platform upon lowering said panels, thereby causing said hinge pin to ride up in said slot.

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