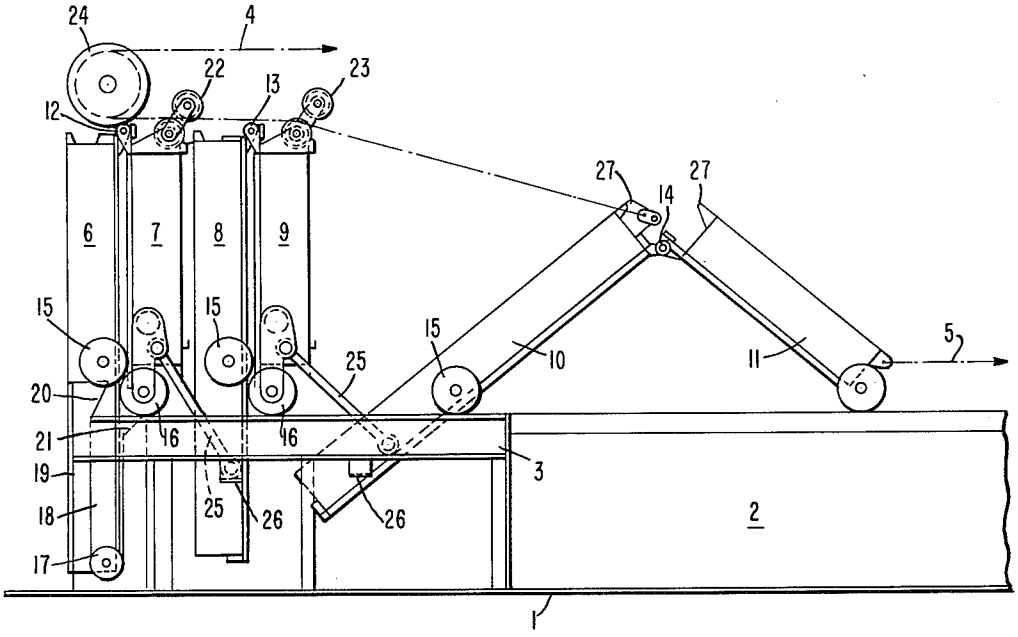
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HATCH COVERS OF THE TYPE COMPRISING A PLURALITY OF PAIRS OF SECTIONS FOLDABLY CONNECTED TO ONE ANOTHER

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HATCH COVERS OF THE TYPE COMPRISING A PLURALITY OF PAIRS OF SECTIONS FOLDABLY CONNECTED TO ONE ANOTHER

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1 Claim. (Cl. 160—193)

In certain types of hatch covers, which are supported by wheels running on tracks arranged along the sides of the coaming, the sections are subdivided in smaller units in order to prevent the sections from being raised too high in open position. The sections are thereby often by means of hinges connected to each other in pairs, and in certain cases it is also proposed that the first section in each pair shall be wider than the following in order that the height of the coaming in the best manner may be used as stowing space.

One object of the present invention is to obtain a simple arrangement with a smaller number of fittings and movable parts and which facilitates a proper guiding of the sections in connection with the stowing.

A further object of the invention is to arrange two mutually connected sections in such a manner that they can be supported by two pairs of wheels only and to provide means adapted to prevent the portion of the sections between the two pairs of sections from sinking down below a horizontal position.

A still further object is to interconnect the pairs of sections in such a manner that a good guiding and a compact stowing of the sections is obtained.

With these objects in mind the invention is characterized by that each pair of sections is supported by two pairs of wheels only, one of said pair of wheels in the usual manner being arranged at the corners of the second section remote from the stowing ramp, whereas the second pair of wheels is arranged near to the transverse axis through the centre of gravity of the first section and that lugs are arranged at the meeting edges of the sections in each pair, which in co-operation with the pertaining hinges prevent a sinking down of the portion of the sections between the pairs of supporting wheels and that furthermore the pairs of sections are connected to each other and to the stowing ramp in such a manner that the last mentioned pairs of supporting wheels will constitute a centre during the earlier part of the opening movement of the pertaining first section and reversely a centre during the later part of the closing movement.

In the annexed drawing the invention is shown by way of example as applied to a hatch cover comprising three pairs of sections.

In the drawing 1 designates the ship's deck and 2 the coaming surrounding the hatchway. In connection with the coaming a stowing ramp 3 is arranged on which the sections are stowed when the hatchway is uncovered. The sections are operated to open position by means of a wire 4 attached to the outer pair of sections, and to closed position by means of another wire 5. The wires can be connected to a cargo winch or a corresponding gear in a manner known per se. The hatch cover sections, six in number, are grouped into three pairs 6 to 7, 8 to 9 and 10 to 11, respectively, and interconnected by hinges 12, 13 and 14, respectively. The first sections in each pair 6, 8 and 10 are much wider than the second sections 7, 9 and 11 as corresponds to about the height of the coaming, whereby a good utilization of the stowing space is obtained without any surrendering of the demands upon an easy manoeuvrability for the whole unit. Each of

the first sections is supported by only one pair of running wheels 15, and at the corners of the second section, remote from the ramp, there is a second pair of running wheels 16. The running wheels 15 of the first sections are arranged at the outer side of, but as close as possible, to the transverse axis through the centre of gravity of said sections. As the following second sections are united to the first sections at their unsupported ends, there will be a deflective moment at the pertaining hinge, which will be counteracted by co-operation between the hinges 12, 13 and 14, respectively, and lugs 27 arranged in the dividing planes. The sections thereby retain a satisfactory distance from the coaming during the horizontal movement. By this arrangement it is possible materially to reduce the number of running wheels, and as these are comparatively expensive and require a continuous supervision, an essential simplification of the whole arrangement is obtained.

The location of the running wheels 15 and the height of the coaming define the stowing space for the parts of the first sections reaching downwards, and as the distance between the wheels and the outer end of sections turned against the stowing ramp, often is greater than the height of the coaming the first sections must be raised so that they during the last part of the stowing movement do not touch the deck.

The guiding of the first section in the first pair consists in a known manner of rollers 17 attached to each outer corner of the section, which co-operate with vertical slots 18 located in portions 19 constituting supports for the horizontal beams forming tracks in the ramp. The rollers 17 are so arranged that they do not touch said beams and consequently they normally do not support the section. At the end of the movement of the pertaining section the rollers are caught by stoppers 20, which are obliquely bevelled. The opposite part of the support for the beam is bevelled in the same manner so that the roller easily slides into the guiding slot, and at the same time co-operates in the raising operation. The pulling wire 4 is attached to the outer pair of sections near to the hinge 14 and passes between pulleys 22 and 23, located near to the folding hinges 12 and 13, respectively, of the preceding pairs of sections. When the sections lie horizontally over the hatchway and a pulling force is applied to wire 4, the whole string of sections is displaced along the ramp. The wire runs over a pulley 24 attached to a deck-house. When the rollers 17 reach the stoppers 20, the wire forms an angle with one part between the pulley 24 and the first pulley 22 and a second part horizontally outwards to the point of attachment at the outer pair of sections. As the horizontal movement ceases, a continued pulling in the wire will straighten the same between the pulley 24 and the outer point of attachment, whereby the pulley 22 and also the sections 6 and 7 are raised. The roller 17 then sinks down into the slot 18. This is so designed that the measure between its bottom and the track on the ramp is smaller than the measure between the bottom and the lower part of the running wheels 15, and for that reason said wheels are raised from the track during a continued folding movement and will be located a good distance above the track, when the sections reach their final vertical position.

It is of essential importance for operating the hatch covers that they in open position reset in an intended point, i.e. in this case in the bottom of the guiding, so that possible defects during the mounting do not result in the section being supported by the wheel 15.

The following pairs of sections are united to the preceding pair by means of links 25. These are pivotally attached to the fittings which constitute attachments for the running wheels on the second section in the pre-

ceding pair and the first section in the following pair at a suitable point, in such a manner that the running wheels also in this case will definitely be raised from the track of the ramp. The ramp is provided with brackets 26 adapted to support the lower part of the links during the last part of the opening movement. The links will thus be effectively supported and the section rests safely. The links are arranged inside the tracks of the ramp and are thus in the best manner protected against external damage and at the same time the risk for accidents at work is avoided as much as possible.

What I claim is:

In a ship having a deck with a hatch opening therein, a coaming and a hatch cover adapted to cooperate with said coaming, said cover comprising a number of pairs of first and second sections connected to each other by means of hinges, said sections being arranged to be automatically folded and unfolded by means of a pulling mechanism acting essentially horizontally both ways in the longitudinal direction of the hatch opening, the first section of each pair being about as much wider then the second section of the same pair as corresponds to the height of the coaming;

tracks for supporting said sections along two sides of the coaming;

a stowing ramp situated at one end of the opening and arranged at about the same level as the upper edge of the coaming;

a single pair of first supporting wheels on the first, larger section arranged near the transverse axis through the center of gravity thereof;

a single pair of second supporting wheels on the second section arranged at the corners thereof remote from the stowing ramp;

lugs arranged at the meeting edges of the hinged sections of each pair adapted in cooperation with the pertaining hinges to prevent a sinking down of the portion of the sections between the two pairs of supporting wheels;

vertical guiding slots in the ramp adjacent the end of the ramp remote from said hatch opening;

hinge means connecting the larger end section of the first pair to the ramp, said hinge means containing pin-shaped members at the front corners of said larger section adapted for cooperation with said vertical guiding slots;

and linkage means connecting the larger section of each succeeding pair with the second pair with the second section of a preceding pair, said linkage accommodating a considerable displacement between abutting edges of said large and second sections;

said hinge means being so designed that the pair of first supporting wheels constitute a turning center during the early part of the opening movement of the pretaining section and reversely a corresponding center during the later part of the closing movement, whereas the hinge means constitutes the center during the remaining parts of the opening and closing movements.

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