DEVICE FOR LAUNCHING BOATS ON BOARD OF VESSELS

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This invention relates to launching gear for ships' boats and has particular reference to launching gear of the kind wherein the boat is normally suspended inboard the ship from davit arms rotatable in davit sockets for swinging said boat outboard. It has for its object to provide a novel, simple and improved construction for such launching gear, with the advantage—unattainable with devices hitherto known in this art—that boats can be swung outboard and launched, entirely under the motive force due to their own weight and that of certain moving parts of the davit system, from vessels having a very heavy list.

My invention comprises boat launching gear of the kind hereinafore defined, wherein the davit sockets are mounted, adjacent the ship's side on foot girders or on a frame structure pivoted for rotation about a fore and aft axis and normally supported in a raised position, said foot-girders or frame structure being adapted, when permitted to rotate under the influence of gravity so to move the davit sockets that the davit arms are constrained to swing outboard under the influence of the boat's own weight.

In carrying my invention into practice I provide boat chocks supported by the foot girders or frame structure in such a manner that, in the operation of the davit system to swing outboard a boat, the said chocks recede from and release the boat's keel before commencement of the outboard swing of the davit arms.

As a further feature of my invention, I connect the davit sockets pivotally to the foot girders or frame structure and pivot them also to arms whereof the inner extremities are pivoted on a fore and aft axis arranged inboard the ship, in such wise that, upon operation of the device the angular movement imparted to the davit sockets by downward inclination of the foot girders or frame structure is augmented by the amount of further angular movement in an outboard direction due to the action of said arms.

For the most efficient operation of my improved launching gear under adverse conditions (as in case of shipwreck) the fore and aft axis of rotation for the foot girders or frame structure should be located so far inboard that, even when the vessel has a heavy list, the said foot girders or frame structure can rotate under the influence of gravity far enough for the davit sockets to take an outwardly inclined position which will ensure the outboard swing of the davit arms.

The foot girder structure or frame structure is normally supported by cables or bars controlled by braking mechanism which permits of lowering the davit system at an adjustable speed. Preferably an hydraulic brake is used for this purpose.

In the accompanying drawings—

Figure 1 is an athwartships section of a davit mechanism constructed according to my invention.

Figure 2 is an elevational view of the same looking inboard, while Figure 3 is a plan view of the mechanism.

Figure 4 is an enlarged side elevational detail of the removable supporting means for the davit arms and the boat.

The davit arms 1 from which the boat 2 is suspended are pivoted in davit sockets 3 in the usual way. These davit sockets are pivotally connected at 4 on a fore and aft axis to foot girders 5, on which are fixed frames 6, each provided at its upper end with a recess. In these recesses is lodged a girder 7, of T-section, on the upper flange of which the boat-chocks 8 and 9 are fixed. The inner chocks 9 are fixed and of the usual construction while the outer chocks 8 are only just high enough to keep the keel in place.

The foot-girders 5 are united by cross-connections so as to form a frame which at 11 is mounted rotatably on a horizontal fore and aft axis arranged, according to the ship's construction to afford a proper tumbling action to the davit system as hereinafter more particularly explained.

The upper ends of the davit-sockets are provided at 12 with pivotal connections to arms 13 the inner ends of which are pivoted for rotation about points 14, arranged under the tumbling axis 11 of the foot-girders.

The foot-girders 5 are arranged under the boat deck, the frames 6 and the davit-sockets 3 projecting above it through suitable slots. The arms 13 are vertical from the points of rotation 14 and then pass along beneath the boat-deck, till they reach the slots aforesaid through which slots they pass obliquely to the upper ends of the davit-socket. In this way these arms, which may be mutually connected by cross-connections, leave the promenade-deck quite free and unobstructed, if the boat be in its normal inboard position and lashed on deck. Under
these normal conditions the davit arms and sockets are inclined towards the boat at an angle of about 10° and the boat is exactly above the boat-checks on the girder.

It will be observed that the tumbling axis 11 is located so far inboard that, even if the vessel has a heavy list, the weight of the foot girders will suffice to ensure their rotation about said axis to an extent sufficient to secure the requisite outward swing of the davit arms.

Between boat-deck and promenade-deck close to each davit-socket are arranged two heavy stanchesions 16 which serve for supporting the boat-deck, and also as guides for the davit-sockets, when the davits are lowered by rotating the foot-girders about the axis 11.

At the top of the davit socket two chains 17 from the deck are attached in such a way to front and rear that both in the upper and in the lower position (indicated in the drawing in dotted lines) of the davits they stand taut.

The whole davit system is kept up by four steel cables, two at the foot of each davit-socket. The cables 18 and 19 for the one davit-socket are led over rollers 20 and 21, and then run inboard, where they are led around a second set of rollers 22 and 23, after which both cables are attached to one end of the piston rod 24 whereof the piston 25 is arranged in a cylinder 26 filled with a liquid. The cables 27 and 28 for the other davit-socket are led in similar manner over and around rollers 29, 30, 31 and 32, but are then led back near the cylinder 26 around two rollers 33 and 34 to the end of the piston rod 35 opposite to that which receives the cables 18 and 19. The opposite ends of said cylinder are connected by a by-pass 36 in which a regulating cock 37 is interposed.

The device operates as follows:-

When the cock 37 is opened, the weight of the whole apparatus rotate around the axis 11 acts upon the cables 18, 19 and 27, 28, whereby the liquid in the cylinder 26 is forced through the by-pass 36 from the one end of the cylinder into the other end; thus the cables will be eased off so that the whole apparatus will begin to rotate around the axis 11. The speed of this movement may be controlled at will by the extent to which the cock 37 is opened.

At the same time the arms 13 push the davit-socket with the rotatable davit arms in an outboard direction so that the said sockets and arms attain a more vertical position with regard to the foot-girders, and these foot-girders, with frames 6, on which the boat-checks rest, will be lowered more rapidly than the boat itself; thus the boat will become free from the boat-checks so that it can swing outboard.

As soon as the davit-sockets have passed the true vertical position, the davit arms will turn outwards of their own accord and the boat will hang free of the ship's side. At that moment the regulating cock 37 is closed. The boat is now lowered in the usual way until it is level with the promenade deck, so that the embarkation of the passengers may take place. As soon as the boat is loaded the davits may be cased off until their lower extremities rest on the promenade-deck, this position being indicated by dotted lines on Figure 1 of the drawing. In the meantime the girder 7 is lifted from the frames 6 and remains with the boat-checks on the boat deck. The loaded boat now hangs well clear of the ship's side so that it cannot be boarded and overburdened by nervous passengers still remaining on the promenade deck.

The chains 17 now stand taut thereby affording additional support to the davits. Only then is the boat eased off into the water.

The same procedure is followed when the ship has a list to one side but in such case it will take more time before the davit-sockets attain and pass the true vertical position so as to enable the davit arms to turn out. The more the list the ship has, the farther must the davits be eased off to get the boat out.

By the device according to my invention, however, the boats may still be launched at a list which would render it absolutely impossible with the usual launching devices.

If two boats are carried side by side the davits must be brought back to their original position to take up the second boat. This may be done in various ways. For example, a tackle may be hooked into the eye at the end of the piston rod which lies most in the cylinder and with this tackle the davits may be returned by means of steam-winchess. Also by means of an arrangement of toothed wheels and a screw with guide-cam, the davits may be hoisted up and inboard, or an electric pump or hand pump may be employed for pumping over the liquid to the other side of the piston, so returning the davits. In all cases the cock must be open during return of the davits but is closed again as soon as the davits reach their normal inboard position.

When, however, the davits are fully carried off much power is required to hoist the whole construction by means of the cables extending to the foot girders. It is therefore preferable first to set tackles on the heads of the davit sockets, and to hoist the apparatus by the aid of such tackles.

Finally it is to be observed that the embodiment hereinbefore described here before serves only by way of example and that within the limits of the invention claimed, various modifications and additions to the constructive embodiment are possible.

Thus, for instance, in cargo-boats which have no separate boat-deck and promenade
deck, construction and arrangement of the foot girders and arms may be carried out in a more simple way and they may then be pivoted to frames which are arranged against the engine-casing or cooling-casing. As the boat will stand at such a height that it cannot be reached from the usual deck, a light auxiliary deck may be laid on these frames at the inner side of the boat to give access thereto. In the eased-off position the davits will then rest upon the deck on which, in the devices hitherto used, the boats themselves stand.

Having thus fully described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. A device for launching boats on board a vessel of the type wherein the boat is normally arranged within the side of the vessel and is adapted to be swung beyond the side of the vessel, including a supporting structure positioned longitudinally of the vessel and adapted for vertical swinging movement, davit sockets pivotally mounted on the outer ends of the supporting structure, davit arms rotatable in said sockets and between which the boat is suspended, and movable connecting means between a stationary part of the vessel and the supporting structure for permitting the supporting structure when released to swing downwardly thereby causing the davit sockets to move and the davit arms to rotate outwardly under the influence of the weight of the boat.

2. A device for launching boats as claimed in claim 1, wherein boat chocks are positioned on the supporting structure for re-sensibly holding the keel of the boat, substantially as and for the purposes set forth.

3. A device for launching boats on board a vessel as claimed in claim 1, wherein the supporting structure includes a main supporting frame to which the davit sockets are pivoted, and auxiliary supporting angular bent arms also pivoted to the davit sockets and having their inner extremities pivotally mounted within the vessel in such manner that upon operation of the device the angular movement imparted to the davit sockets on the downward movement of the supporting structure is further augmented by the angular movement in the outward direction due to the movement of the said arms.

4. A device for launching boats on board a vessel including supporting means mounted for vertical swinging movement beneath the deck of a vessel, davit sockets pivoted for horizontal swinging movement at the outer ends of the supporting means, davit arms swivelled in said sockets and from which a boat is adapted to be suspended, auxiliary supporting means pivoted for vertical movement beneath the deck of the ship and also pivoted to the davit sockets, and means for controlling the outward and downward swinging movement of the supporting and auxiliary supporting means.

5. A device for launching boats on board a vessel as claimed in claim 4, wherein the supporting means includes spaced foot girders, frames carried by the upper surfaces thereof and adapted to be normally positioned above the deck of the ship, boat chocks fixed to the upper edges of the frame.

6. A device for launching boats on board a vessel as claimed in claim 4 wherein the auxiliary supporting means is in the form of angularly bent arms pivoted beneath the pivotal point of the main supporting means.

7. A device as claimed in claim 4, wherein the controlling means consists of cable rollers connected to the main supporting means, cables operating over the rollers, and valve controlled fluid pressure means operably connected to the cable for regulating the operation of the cables over the rollers.

8. A device for launching boats on board a vessel including a main supporting frame pivoted beneath the deck of the vessel for vertical swinging movement, boat chocks on said frame adapted to support the boat, davit sockets operably connected to the frame, davit arms swivelled in the sockets and from which the boat is adapted to be suspended, the frame being mounted sufficiently within the boat that even when the vessel to which it is attached has a heavy list it will by reason of its own weight rotate around its horizontal axis so that the davits will assume an outwardly inclined position, and a device for causing the frame to rotate and at the same time cause the boat to be lifted from the boat chocks.

9. A device in accordance with claim 8, wherein a device for causing the frame to rotate consists of angularly bent arms pivoted at their pivotal ends for vertical swinging at a point opposite the frame and pivotally connected at their outer ends to the davit sockets to ensure of the lifting of the boat from the boat chocks at the initial swinging of the frame and the subsequent outward inclination of the davit sockets.

10. A device in accordance with claim 8, wherein cables are operably connected with the frame, and a fluid brake operably connected with the cable for controlling the lowering movement of the frame.

11. A device in accordance with claim 4, wherein means is provided for limiting the upper and lower movement of the davit sockets when in the upper and lower positions.

In testimony whereof I affix my signature.

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