To all whom it may concern:

Be it known that we, DAVID RICHARD LJUNGMAN and FRANS DANIEL JANSSON, subjects of the King of Sweden, and residents of Göteborg, Sweden, have invented certain new and useful Improvements in Devices for Lowering Boats from Ships, of which the following is a specification.

This invention relates to a ship's davit, and has for its objects to provide means for simultaneously rotating and axially moving a boom, by means of which a lifeboat is launched fully manned from its normal inboard position to a lowered outboard position; and to further provide means whereby the boom is automatically locked against further movement subsequently to a minimum outboard position of the boom having been reached.

The invention consists in the novel features of construction, arrangement and combinations of parts fully described in the following specification and set forth in the appended claims.

The preferred embodiment of the invention is illustratively exemplified in the accompanying drawing, in which: Fig. 1 is a side elevational view of our improved davit showing the boom in its outboard position, and in its inboard position in dotted lines; Fig. 2 is a substantially vertical sectional view through the supporting frame by means of which the boom is mounted to operate rotatably and axially thereof; Fig. 3 is a substantially longitudinal sectional view taken through the deck and showing the locking mechanism for the booms; Fig. 4 is a plan view of the ship's deck showing the positions of and mechanism for locking the booms in position; Fig. 5 is a detail sectional view of the locking mechanism; Fig. 6 is a horizontal sectional view taken on the lines A—B of Fig. 5; Fig. 7 is a modified form of the locking mechanism shown in vertical section; Fig. 8 is a view taken on the lines A—B of Fig. 7; and Figs. 9 and 10 show a means for suspending the lifeboat from the booms.

Referring to the drawing, a denotes a boom having the usual curved upper portion and an extended lower portion projecting below the ship's deck, as shown in Fig. 1. The mid portion of the boom a adjacent the ship's deck is supported in a frame or standard b comprising a cylindrical upright section provided with a helically formed guideway f extending completely around the section. The walls of the guideway f project outwardly beyond the outer surface of the cylinder to provide an inclined path by means of which the boom a is operated to move rotatably and axially thereof. The boom a carries a collar c which is provided with a projecting portion adapted to support a roller d by means of a pivot pin e having its inner end threaded into the projecting portion of the collar c and the opposite end projecting through the roller d. With the collar c rigidly secured to the boom a and the roller d carried by the former in a radius coinciding with the path of the guideway f, it will be noted that rotary movement of the boom a will cause the roller d supported in the guideway f to travel to a lower or higher level with a consequent change in the elevation of the boom itself. The two possible extremes to which the boom a may be moved are shown in Fig. 1, where the boom in its inboard position, shown in dotted lines, is held at a higher level than when operated to its outboard position, as shown in full lines. These positions are determined by the relative location of the high and low points of the inclined guideway f with respect to the side of the ship. It is to be further understood, that inasmuch as there are two davits used for each lifeboat and that the general rotation of each boom a to launch a boat is preferably towards the opposite davit, the higher section of the guideway will be on the side of the standard b, which is farthest from the outboard side of the ship. This particular construction is designed to provide the greatest possible amount of support to the boom a during rotary movement of the latter towards the outboard side. In Figure 1 it is shown that the collar c is mounted on the lower portion of the boom a in a position to bring the roller d on the same side of the boom as the curve at the upper portion of the boom, in which case the strain of a load suspended at the end of the boom a will tend to force the roller d downwardly against the lower wall or path of the guideway f. Therefore, instead of depending upon the base of the boom to take care of the great weight which is suddenly brought to bear against the axis of the boom, by the launching of a lifeboat, the mid portion of the boom is rig-
idly held in aligned position through the engagement of the roller \( d \) with the surface of the guideway \( f \).

To further strengthen the boom \( a \) against lateral displacement the upper end of the standard \( b \) is provided with a bearing cap or guide \( g \) comprising a disc member having a central opening to receive the mid portion of the boom \( a \) and a ball race in which a series of ball bearings is movable between the surface of the boom and the wall of the race. The cap \( g \) carries a second section \( h \) secured thereto and provided with a bearing plate \( k \) which embraces the boom \( a \) and prevents water from entering the interior of the standard to freeze or otherwise endanger the operation of the parts. A spiral shaped cover plate \( i \) is secured to the edge of the wall of the guideway \( f \) to provide additional protection, for the interior of the standard, against the elements. The extreme lower end of the boom \( a \) which projects below the ship's deck is mounted in a guide standard \( g' \) secured to a sub-platform, the said guide being provided with a bearing cap similar to the corresponding part of the other guide \( g \) of the standard \( b \).

It is desirable especially during heavy weather at sea to provide the movable booms \( a \) with means for automatically locking them in either of their operative positions, i.e. outboard or launching position and inboard or deck position. In order to fix the position of the boom \( a \) a locking mechanism is provided, which comprises a sleeve \( l \) secured to each boom \( a \) and a series of movable bolts \( m \) operating to check the vertical movement of the booms. The sleeve \( l \) comprises a cylindrical member having upper and lower parallel flanges and a centrally disposed flange which is parallel to the other two flanges. The sleeve \( l \) is of a diameter which permits both rotary and axial movement thereof through an opening in the ship's deck and through the space in the interior of the standard \( b \). In Figure 3, it will be seen that a pair of oppositely arranged bolt guides are secured to the underside of the ship's deck closely adjacent each sleeve \( l \) so that the bolts \( m \) when projected from their respective guides by springs \( n \) will operate toward the axis of the sleeves \( l \) and booms \( a \). The inner ends of these bolts \( m \) are beveled in opposite directions, i.e. the left bolt will be inclined downwardly from its upper edge towards the rear while the other bolt will be inclined upwardly from its lower edge towards the rear. In Figure 4 the mechanism for operating these bolts is illustrated and comprises a laterally movable connecting rod \( o \) extending through the outermost ends of the guides for the bolts \( m \). The ends of the rod \( o \) are bent outwardly at right angles to provide arms \( p \) which are loosely secured to the rear ends of the outside bolts \( m \). The inwardly projecting ends of the inside bolts \( m \) are similarly connected to a pair of arms \( p' \) carried by the rod \( o \) closely adjacent the inner ends of the bolts 10 guides. In order to operate this rod \( o \) axially thereof to throw the bolts \( m \) out of engagement with the flanges of the sleeves \( l \), the rod is pivotally connected to one end of a bell crank lever \( r \) carried by a bracket \( z \) mounted on deck. One arm of the lever \( r \) is provided with a weight \( q \) which tends to hold the rod \( o \) in its adjusted positions. It will be understood that the pivotal connection between the lever \( r \) and the rod \( o \) consists in providing the lower end of the lever arm with a slot through which a pin carried by the rod projects. In Figures 5 and 6, a modification of the locking device is shown having the roller \( d \) mounted on one side of a sleeve \( l' \) which is provided with bolt receiving openings arranged in two levels, one above the other. The standard \( b \) adjacent the path of movement of the sleeve \( l' \) is provided with a boss having a through bore to receive a bolt \( 2 \), the latter being beveled at its inner end, from the upper edge thereof rearwardly towards the under edge. In normal position the bolt \( 2 \) is held in engagement with one of the openings in the sleeve \( l' \), a position which is brought about by a spring \( 3 \) yieldingly held against the straight end of the bolt 2. The opposite end of the spring \( 3 \) is seated against a stop plug mounted in the outer end of the opening through the boss. It is desirable wherever only one bolt is used, to construct the latter so that it may be rotated to reverse the beveled end and thereby effect a locking action when the boom may be moved axially in the opposite direction, i.e. upwardly to deck the lifeboat. In order that the cylindrical bolt \( 2 \) may not rotate when in operating position the latter is provided with oppositely disposed pins \( 5 \) movable in short keyways \( 6 \) cut into the inner surface of the boss. The space at the inner end of the keyways \( 6 \) permits the bolt to be rotated by withdrawing it until the pins \( 5 \) are clear of the keyways, such an operation is effected by a handle \( 4 \) having a stem movable through the plug and attached to the straight end of the bolt 2.

Figures 7 and 8 illustrate a still further modified construction of the means for locking the boom \( a \) in position. This particular mechanism comprises a sleeve \( l'' \) having longitudinal grooves into which the bolts \( 2' \) are projected. In this arrangement the level of the bolt is disposed laterally instead of vertically as in the other forms. In operation the davits operate as follows: Assuming a lifeboat is to be swung outboard it is first raised above the ship's deck by means of a suitable block and tackle in the
usual manner and then manned. The bolts $m$ which have been engaged beneath the center flange of the sleeve $l$ are withdrawn by movement of the lever $r$ and the booms $a$ supported by the rollers $d$ on the inclined paths $f$ will descend simultaneously with the rotation of the boom as the rollers follow their respective paths. The booms $a$ will rotate toward each other and the lifeboat will swing outwardly over the side of the ship. During the axial movement of the boom and sleeve $l$ to a lower position the bolt $m$ having the inclined end on its upper edge will slide over the center flange of the sleeve and enter the upper groove in the latter. In this position the boom $a$ will be locked against movement to return to its inboard position. This feature is very important in a heavy rolling sea where a sudden inclination of the ship will have a tendency to swing the lifeboat deckward, in which case should there be no means of preventing such a movement of the boat, and booms the former would be dashed to pieces.

To return the booms to their normal inboard positions the lever $r$ is moved to the opposite side of the pivot and the rod $o$ will operate to withdraw the engaging bolts $m$ through the arms $a$.

In the modifications of the locking mechanism shown in Figures 5 to 8, the bolts 2 and 2' are operated by handles 4 which are yieldably withdrawn against the springs 3 to release the sleeves $l'$ and $l''$ and then rotated to engage the ends against the bolt receiving openings in the sleeves.

Having fully described the invention and disclosed the general operation of the several parts, what we claim and desire to secure by Letters Patent is:

1. In a ship's davit, the combination with a supporting member having an inclined guideway and an axial bearing, of a boom mounted in said bearing and projecting axially through said member, said boom being provided with a roller movable in said guideway to simultaneously operate the boom in a rotary and axial direction, and a locking mechanism for the boom and comprising a flanged sleeve movable with the boom and oppositely projecting bolts movable into and out of the path of the axial movement of the said sleeve to lock the latter in its extreme axial positions.

2. In a ship's davit, the combination with a rotatable and axially movable boom, of an automatically operated mechanism for engaging the said boom at its maximum axial positions, said mechanism comprising a grooved sleeve secured to said boom and movable therewith, a pair of oppositely beveled bolts yieldably directed towards the axis of said boom and into the path of the said sleeve, and means for operating the bolt against the yieldable support to withdraw the former out of the path of movement of the sleeve to permit axial movement of the latter.

In testimony whereof, we have signed our names to this specification in the presence of two subscribing witnesses.

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Witnesses:
CLAES ÅSTRÖM,
OLOF WALLSTRÖM.