WINCH ON A SHIP FOR HOISTING AND LOWERING A BOAT

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The present invention is in respect of a winding arrangement on board ship for hoisting and lowering a lifeboat, a motor launch, or similar craft, which is suspended from one or more sets of winding tackle, with at least one end of the tackle wound on a drum of the winding gear.

In cases where such a winding arrangement is in use, the critical moment occurs when the boat which is being lowered or hoisted is close to the surface of the water, for difficulties may then arise if the boat is lifted aloft by a wave, leaving the winding tackle hanging down loose. In an instance such as this the possibility has to be faced that one of the tackle guys might slip off its hook and the boat may then drop back with a jerk into the hoisting tackle or partially fall back into the water. Now, the invention aims at evolving such a winding arrangement in which, during this critical moment no dangerous conditions can arise. To this end there is provided, for each set of hoisting tackle, an auxiliary motor which, either direct or through the intermediary of toothed wheels, is non-detachably connected to the drum on which one end of the winding tackle is wound, so that the auxiliary motor always follows the movement of this drum, and the auxiliary motor, when excited, exerts so great a force on the drum that the hoisting guys are kept taut, although a movement of the drum, under the influence of the forces acting on the hoisting tackle as a result of the boat’s weight, is not hampered.

In accordance with the invention the auxiliary motor may, as an option, be provided for both directions of rotation. What is achieved by this is that, if the boat is lowered into calm water, the lowering tackle can be released easily by lowering it a little. In the known arrangement, the winch often sets up such a great resistance against winding-off, that it is difficult to release the lowering tackle.

In one useful form of construction the auxiliary motor can, in accordance with the invention, form part of the main motor, the purpose of which is to hoist with a fully loaded drum and which, when used as an auxiliary motor, is only partially excited.

In accordance with the invention the auxiliary motor may moreover, be non-detachably coupled to a drum, to which the fixed part of the lowering tackle is fastened. The boat can then be suspended from a tackle block. Here the advantage is that the existing winch can be employed and only one drum complete with auxiliary motor, extending each set of toothed wheels.

The invention will now be further described with reference to the accompanying drawings which show examples of construction. In these drawings:

FIG. 1 is a diagrammatic layout of a winding arrangement in accordance with the invention, and

FIG. 2 is a diagrammatic layout of modified arrangements of the invention.

In FIGURE 1 the winding drum 1 is connected by way of toothed wheels 2, 3, 4 and 5, to a centrifugal brake 6 and clutch 7, which clutch can be operated by a hand wheel 8 by way of a screw rod 9. By means of the clutch 7, a motor 10 is able, by way of a drive wheel 11, a toothed wheel 12, a toothed wheel 13 and a toothed wheel 14, to drive the clutch 7 and hence, the drum 1. In a corresponding manner a winding drum 15 is coupled by way of toothed wheels 16, 17, 18, 19 of a centrifugal brake 20, a clutch 21, a toothed wheel 22, and the toothed wheels 13, 12, and 11 to the same motor 10. The clutch 21 can be operated by a hand wheel 23 through the intermediary of the screw rod 24.

The axle on which the toothed wheels 13 and 12 are mounted, carries a ratchet wheel 25 which works in conjunction with a pawl 26. In the direction of lowering the tackle wound on the drums 1 and 15 the ratchet wheel 25 is held secure by the pawl 26. An auxiliary motor 28 is coupled, by way of a drive wheel 27, to the toothed wheel 4, and hence, to the drum 1. In a corresponding manner, and by means of a drive wheel 29, an auxiliary motor 30 is coupled to the toothed wheel 18 and hence, likewise to the drum 15. The two drums 1 and 15 can also be coupled together by way of the toothed wheels 5 and 19 through the intermediary of the toothed wheels 31, 32, 33 and 34 and a clutch 35 located between the toothed wheels 32 and 33. The clutch 35 can be operated by the hand wheel 37 by way of the screw rod 36.

When the clutches 7 and 21 are engaged, both the drums 1 and 15 are held stationary in the direction of lowering the load, by the pawl 26 and ratchet wheel 25. The two drums can then, with the aid of a motor 20, be rotated in the hoisting direction. If one of the drums is required to be rotated in the lowering direction separately, then the relevant clutch 7 or 21 is uncoupled and upon the clutch’s being re-engaged, the drum’s motion is arrested. When the clutches 7 and 21 are disengaged and the clutch 35 is engaged, the drums 1 and 15 can be rotated together in the direction of lowering. The auxiliary motors 28 and 30 are always coupled to the drum 1, or 15, respectively. The motors 28 and 30 are so dimensioned that, upon being excited, they are not capable of arresting the lowering motion of the loaded drum. If however the load falls away, then the drums are indeed rotated by these auxiliary motors and, as a result, a locally hanging tackle is immediately made taut again. The auxiliary motors 28 and 30 can also be excited in the direction of paying-out the load, by which means the hoisting tackle can be relieved of tension if so desired.

In FIG. 2 the two hoisting drums 60 and 81 are coupled to a motor 91 by way of toothed wheels 82, 83, 84, 85, centrifugal brake 86, clutch 87, ratchet wheel 88, toothed wheel 89 and toothed wheel 90. The ratchet wheel 88 works in conjunction with a pawl 92. The clutch 87 can be operated by a hand wheel 94 by way of a screw rod 93. An auxiliary motor 95 is permanently coupled, by way of a drive wheel 96, to the toothed wheel 92, and hence, to the drums 80 and 81.

With the aid of the main motor 91 the drums 80 and 81 can be rotated in the hoisting direction. In the pay-out direction they are held in check by the ratchet wheel 88 and pawl 92. When the clutch 87 is disengaged the drums are able to rotate in the direction of paying-out the load. The auxiliary motor 95 is again so dimensioned that the loaded drum cannot be rotated, but instead, the tackle-cables wound on the drums 80 and 81 are pulled taut by the excited motor 95.

FIG. 3 shows a modification of the FIG. 1 arrangement but in which, an auxiliary motor 97 with auxiliary drum 98, and an auxiliary motor 99 with auxiliary drum 100 are employed. A boat 109 is suspended from the tackle 101 and 104 with the aid of tackle blocks 107 and 108. The fixed part of the tackle 101 wound on the drum 80 is passed, by way of pulleys 107, 102 and 103 to the auxiliary drum 98 and attached thereto. The fixed part of the tackle 104 wound on drum 81 is passed by way of
of pulleys 165, 165 and 166 to auxiliary drum 192 and likewise attached thereto. When the tackle 101 and 104 is under load, the auxiliary drums 192 and 93 will always be completely unwound. The moment the load is removed, for example by virtue of the fact that a wave 110 has lifted the boat 109 so that the tackle hangs down loose, the tackle 101 and 104 will be pulled taut, the motors 97 and 98 being under load.

What I claim is:

1. A winding mechanism for shipboard tackle to hoist and lower a lifeboat, motor launch, or similar craft, comprising a drum on which one end of a tackle is to be wound, a main motor, means connecting said main motor to said drum to drive the drum in a hoisting direction, an auxiliary motor, means nondetachable connecting said auxiliary motor to said drum to follow its movement in both hoisting and lowering directions, a second drum to which the other end of the tackle is adapted to be fastened, and a second auxiliary motor nondetachably coupled to said second drum, said auxiliary motors being excitable to drive the drums in a hoisting direction with a lesser force than said main motor and sufficient only to keep the tackle taut during lowering movement caused by the weight of the boat and during hoisting movement as when the boat is lifted by a wave, said force being insufficient to hamper such lowering movement.

2. A winding mechanism for shipboard tackle to hoist and lower a lifeboat, motor launch, or similar craft, comprising a pair of drums on each of which an end of a pair of tackles is to be wound, the other ends of said tackles being adapted to be attached to the ends of said craft to be lowered and hoisted, a main motor, means connecting said main motor to said pair of drums to drive the drums in a hoisting direction, a pair of auxiliary motors, means nondetachably connecting each auxiliary motor to a drum to follow its movement in both hoisting and lowering directions, said auxiliary motors being excitable to drive the drums in a hoisting direction with a lesser force than said main motor and sufficient only to keep the tackle taut during lowering movement caused by the weight of a boat and during hoisting movement as when the boat is lifted by a wave, said force being insufficient to hamper such lower movement.

3. A winding mechanism for shipboard tackle to hoist and lower a lifeboat, motor launch, or similar craft, comprising a drum on which one end of the tackle is to be wound, a main motor, means connecting the main motor to said drum to drive the drum in a hoisting direction, and an auxiliary motor nondetachably connected to said drum to follow its movement in both hoisting and lowering directions, said auxiliary motor being excitable to drive the drum in a hoisting direction with a lesser force than said main motor and sufficient only to keep the tackle taut during lowering movement caused by the weight of a boat, said force being insufficient to hamper such lowering movement, said means connecting the main motor to the drum comprising a gear train including a drive transmission shaft and a manually operable clutch, and a ratchet and pawl connected to a portion of said gear train to prevent rotation of said drum in a lowering direction when said clutch is engaged.

4. A winding mechanism for shipboard tackle to hoist and lower a lifeboat motor launch or similar crafts, comprising a pair of drums on which a pair of tackles is to be wound, the tackles being adapted to be attached to a craft for lowering or hoisting the craft into and from a body of water, a main motor, drive connecting means between the main motor and the pair of drums to drive the drums, and selectively operable auxiliary motor means for acting on the tackles so that, when the auxiliary motor means is in operation, the tackles are maintained taut during lowering movement of the craft caused by the weight of the craft and during hoisting movement as when the craft is lifted by a wave in the body of water.

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