

“Runnig and Hoisting”, a Method of Hoisting the Boat by a Derrick in Bad Sea Condition

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1. Introduction

The old fishing training ship Kagoshima maru (638 tons in gross, with twin propellers, retired in 1960) had been engaged in the training of tuna long-line fishing from 1953 to 1959, using two heavy fishing boats (5 tons in weight) loaded on her.

She simply had a derrick, a winch, a capstan and other necessities on the narrow space of her upper deck as her equipment for lowering and hoisting the boat, because she had not been designed originally as a mother ship of the fishing boat but converted from a river ship of the old Navy.

The boats were lowered and hoisted every time she engaged in the fishing in order to shift her position in the fishing field and to prevent accident which may happen in bad sea condition, if the boat is left on the waters.

In good sea condition, lowering or hoisting the boat was made easily or successfully only by using some fenders between the boat and the ship, or in addition to this, using two tackles to pull the boat near or to prevent from swinging the boat outside, keeping her propellers stop, even if a little rolling occured on her.

But it was difficult to lower and hoist the boat by the above way in a bad sea condition of more than the fourth grade in the Beufort's wind scale.

In practicing the fishing, many fishing lines, buoys and fish caught were loaded in the boat, where more than twelve workers were on board, and sometimes the fishing had to be continued by later night, so that the practicing was given up in such bad sea condition as the hoisting of boat seemed difficult from the safety view point in the beginning of the day.

The most anxious and important thing was, when the sea condition became bad, how to hoist the boat which had been lowered on the waters in good sea condition, therefore the method of hoisting the boat that was used in the old Kagoshima maru is described here-with, hoping to develop a similar and advanced method.

2. The method of hoisting the boat

A. Hoisting equipment; The arrangement of itself is shown in Fig. 1.

(a) On the mother ship

Derrick boom	9.3 meters, truss type
Topping lift	wire rope; 26 m/m (6 × 24) block; iron double 340m/m

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Boat fall	wire rope; 24m/m (6 × 24) block; iron double 340m/m	1
	ditto with hook	1
Derrick boom guy	consists of wire penant and rope purchase wire rope; 18m/m (6 × 24), 7 meters manila rope; 24m/m block; wooden single 250m/m	1
	ditto with hook	1
Winch	hot bulb type, 25HP, 350/min. in Rev.	
Capstan	worked by hand, for inboard guy rope	
Windlas	electric type, 20HP, 970/min. in Rev. for outboard guy rope	
Pulling tackle	2 sets, two fold purchase, for pulling boat inboard manila rope; 18m/m block; wooden double 100m/m with hook	2
Others	leading block, cleat, ringbolt, ringplate, eye-plate, bollard, fair leader and lines line; breast line manila rope 22m/m steadyng line manila rope 22m/m	2 2
(b) On a boat		
Boat sling	wire rope; 20m/m (6 × 24), 3.0 meters 26m/m (6 × 24), 2.7 meters iron ring; 30m/m in thick, 150m/m in inside dia. for putting slings together and being hooked by boat fall's block	2 1
Bitt	wooden, 100m/m square, 450m/m in height on deck with a piece of iron led, which pierce into the upper part of itself, in order to prevent the lines made fast from slipping, is shown in Fig. 2	3
Eye-spliced wire rope	attach to bitt, for putting a pulling tackle's hook and lines on itself	
Ringbolt	3 for boat sling, 1 for painter	
Boat rope	manila rope; 22m/m	4

B. Hoisting

(a) Preparation

The undermentioned preparations had to be made in advance of bringing the boat alongside in order to be hoisted in. It was sometimes impossible to stop the propellers of the mother ship as the ship's rolling caused difficulties under bad sea condition. In this case, reduction of her rolling had to be made by means of proceeding herself for leeward, using her engines.

- (1) Arrange the hands to their each station for hoisting the boat.
- (2) Check the machines and gears for hoisting the boat, if they were in good motion,

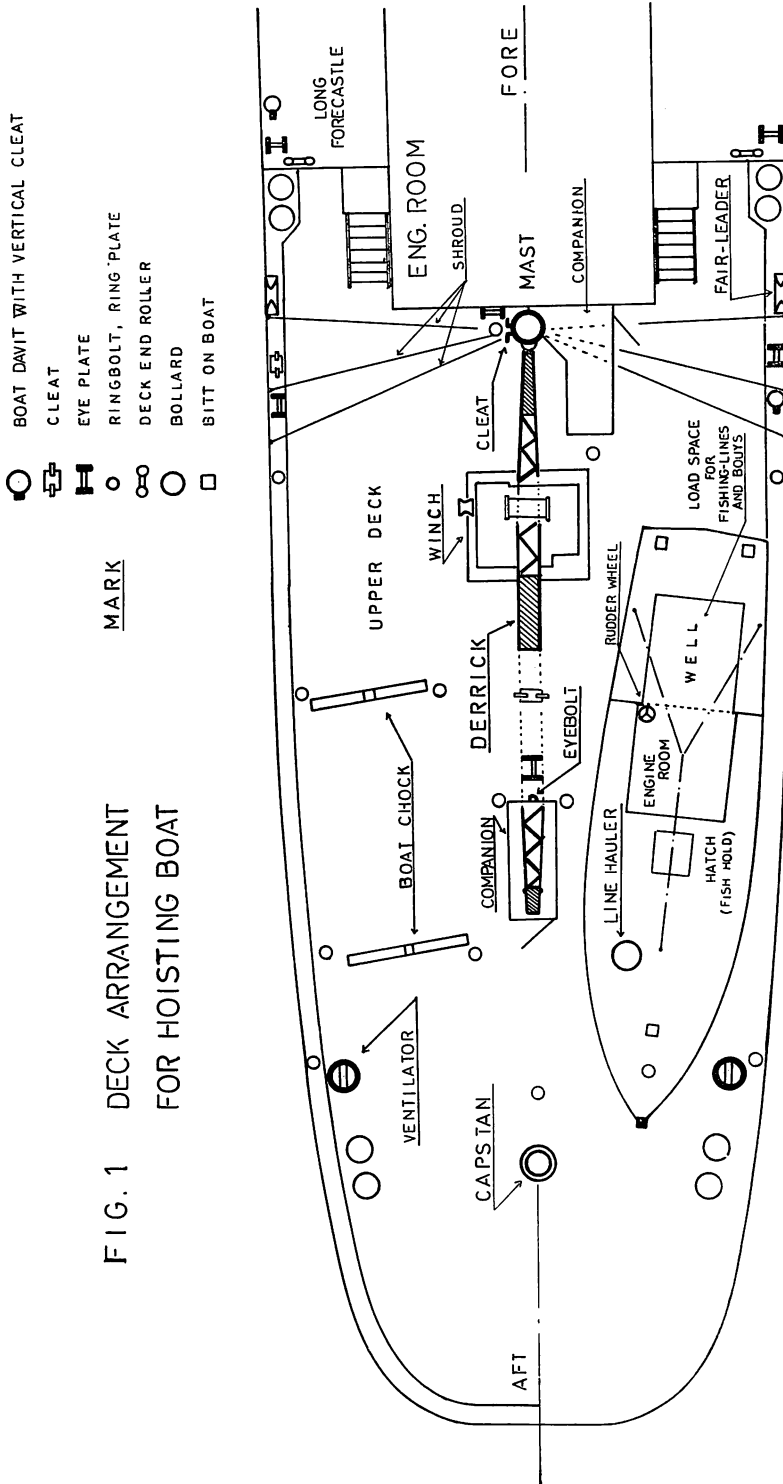


FIG. 1 DECK ARRANGEMENT FOR HOISTING BOAT

- BOAT DAVIT WITH VERTICAL CLEAT
- ◻ CLEAT
- H EYE PLATE
- RINGBOLT, RING PLATE
- DECK END ROLLER
- BOLLARD
- ◻ BITT ON BOAT

MARK

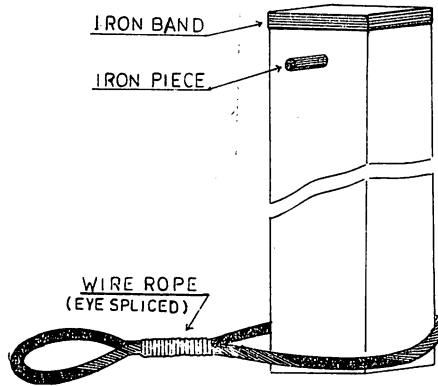


FIG. 2. BITT ON BOAT

and the lines, the pulling tackles and the boat fall were in good order.

- (3) Secure the end block of the pulling tackle on the deck fitting of the ship, both fore and aft.
- (4) Swing the derrick to the position for hoisting the boat, and put the boat fall's block on the deck of the ship to hand its hook over the boat.
- (5) Hang on the ship's side with some fenders for the boat.

The boat had to wait near the ship until all preparations on the ship have been made, at the same time, some preparations for being hoisted as rig the slings, had to be made on herself.

(b) Stopping the ship

As soon as all preparations have been made, her propellers must be stopped, moreover, gone astern so as the ship's side for hoisting the boat come to the lee, if her headway was still holded.

(c) Bringing the boat alongside

While the above mentioned preparations were made, the boat was brought alongside.

The boat ropes which act as the painter or the steadying line some time, two fore and two aft, and the two breast lines were taken first, bringing the boat to the position under the derrick swung out already.

For fixing the boat, the end block of the pulling tackle which has been secured to the ringbolt on the ship's deck with the other end, was connected to the eye of the wire rope attached to the boat's bitt (Fig. 2) with its own hook, both bow and stern of the boat, and at the same time, the ring of the boat sling was hooked by the leading block of the boat fall.

The boat fall had to be slackened a little so as not to place the strain on itself, when the boat is dragged ahead or astern, and then it had to be unhooked off the ring of the sling. If there was a fear of unhooking on account of the wave raising the boat up, the boat fall had to be pulled to the ship by a line which tied up its own hook.

(d) Hoisting

After those acts were completed, a consideration had been taken about the ship's rolling,

which may cause some troubles both on the ship and boat while the boat was hoisted. It was easy to imagine that the boat would be crushed down, bumping against the ship's side, or the deck fittings and the erections on the deck, if the boat was on the swing off the waters.

Therefor, the ship had to be handled, using her engines and helm, to bring the sea on her quarter or so, thus her rolling was considerably reduced, and the boat ceased to be affected by the wave as it was under the lee of the ship, and then her propellers were stopped.

Keeping her direction, hoisting the boat was commenced. Selecting the moment to commence the hoisting was important.

If the boat still pitches or rolls considerably by the waves coming from the stern of the ship, the moment to commence had to be strictly selected, considering about the time which takes to strain the slack of the boat fall in hauling up the boat. In other words, the slack of the boat fall should have been strained over while the boat was on a wave so as to avoid a jerk which is destructive to the hoisting gears and lines. Accordingly, the time of commencing must be determined on the considerations about the wave length, height, velocity and hauling speed of the winch, and yet in the course of keeping the ship's direction. Of course, a quiet moment is the best.

The moment the boat was cleared off the waters, the ship proceeded ahead with slow speed, and altered her direction gradually to the lee, increasing her speed if effective to prevent her rolling and pitching. That is making her encountering period* with wave short so as not to synchronize with her own rolling period.** Also in decision of the direction of the ship, a care for synchronism with wave must be taken.

When the boat was hoisted up to the height which is a little higher than top of the boat chock, hoisting was stopped and then the boat was swung inboard by the derrick and the pulling tackles. In this case, important things were nothing slack in all the guy ropes of the derrick and the pulling tackles, and swinging the derrick slowly inboard so as not to give rapid acceleration on its movement.

Swinging the derrick inboard had to be subordinated to the operation of the pulling tackles so as not to swing the boat too much, because the boat was being pulled inboard by the tackle, outboard by the derrick at some moment, that is to say the boat was swung inboard by relative operation between the pulling tackle and the derrick.

The boat ropes which have been taken into the ship as the painter had to be tautened. When the boat passed over the deck side line as it was swung inboard, two of the boat ropes were retaken through the ringbolt on the ship's deck and another two lines were taken as the steadying line, one forward and one aft, respectively. Thus the boat was led to the position, lowered and placed on the chock.

(e) Notices

* $\frac{L_w}{V_w - V_s \cdot \sin \theta}$ L_w : Wave length, V_w : Wave velocity, V_s : Ship's speed, θ : Angle which is made by ship's head and wave direction.

** about 6.7 sec.

Some of attentions to be paid in hoisting the boat have been explained, the following attentions are needed too.

- (1) Trim the ship on an even keel.
- (2) Let the personnel disembark the boat, prior to hoist the boat.
- (3) Hauling of the pulling tackle should be made so as not to give a jerk or a slack to itself, and the tackle should be controlled so as to keep the boat in the fixed direction.
- (4) On the occasion of turning the ship to the lee, good manoeuver is required. Turning the ship should be done on the spot, using her engines and helm variously, so as not to drag the boat violently for a while. In this case, dragging the boat conversely should not be done.
- (5) Cares for the hoisting gears and lines, above all the pulling tackle and the boat rope, must be taken.
- (6) The order "Commence to hoist the boat" must be given only by the manoeuvrer in the wheel house who knows well the existing circumstance and condition, because decision of the moment to commence the hoisting, is one of the most important things as stated above.
- (f) Real damages sustained in hoisting

The old Kagoshima maru had lowered and hoisted the boat more than one hundred thirty times, including the hoisting by the above mentioned method of about forty times, for past seven years. But only a few accidents had happened all the while as follows.

- (1) The ring together with three boat slings, when the boat was hauling up, were broken down at the welded part of itself owing to its inferior made. Consequently, the boat fell down to the waters, and met with a big damage.
- (2) The boat, when she was being swung inboard, had bumped against the winch, and crushed down. It was due to her swaying in consequence of miss handling of the guy rope of the derrick.
- (3) The boat, when she was being lowered on the chock, dropped owing to slacking over the boat fall in consequence of the winch's trouble, and the the bottom of herself was broken down.
- (4) A wooden bitt of the boat and a block of the pulling tackle were broken owing to decline of themselves, but there was no damage due to their breakage with respect to the boat or the ship.

All these accidents happened in hoisting the boat keeping the ship's propellers stop, in the early days of the engagement in fishing. And most of those were due to shortage of the gear and fitting's own stress or the machine's trouble.

As the crew became skillful in hoisting work, severe checks to equipment were constantly done, and even an accident has never happened.








Strictly speaking, these accidents were not caused by this method of hoisting.

3. Conclusion

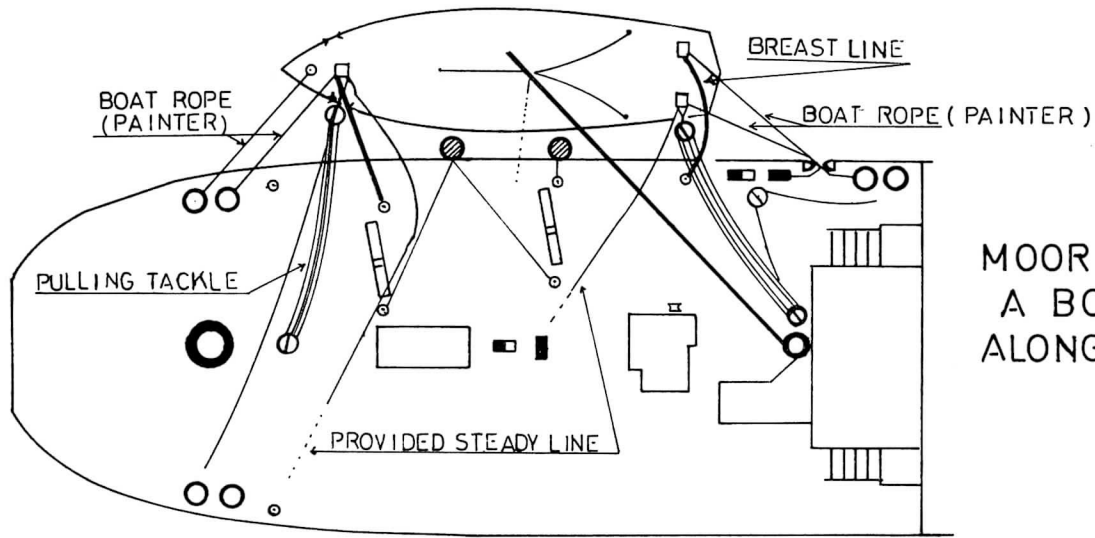
This method of hoisting named "Running and Hoisting" in the old Kagoshima maru,

FIG. 3

HOISTING BOAT

MARKS	
	FENDER
	BLOCK
	EYE PLATE
	CLEAT
	RING BOLT, PLATE
	BOLLARD
	BITT

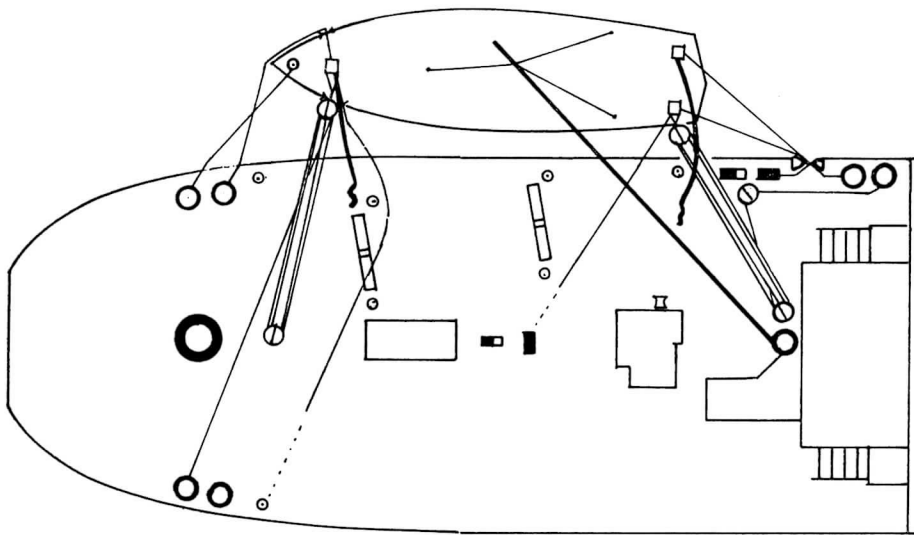
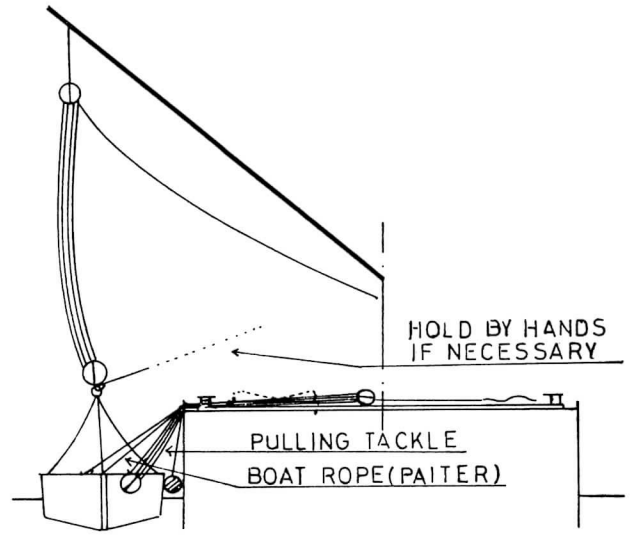
AFT VIEW



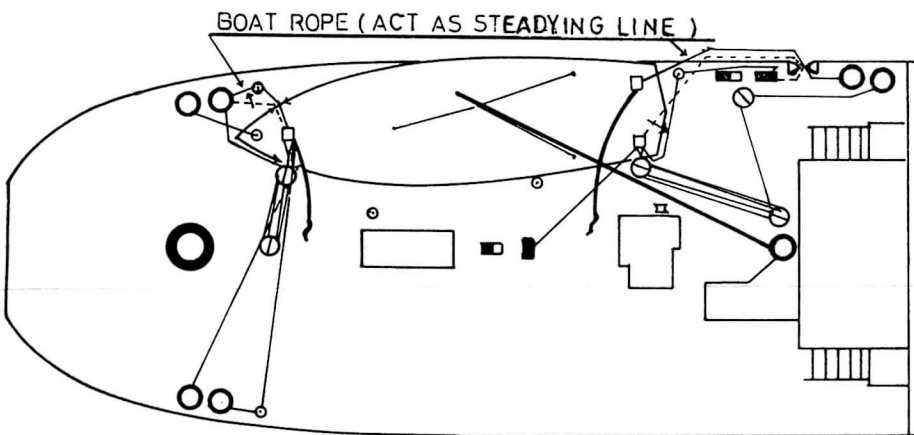
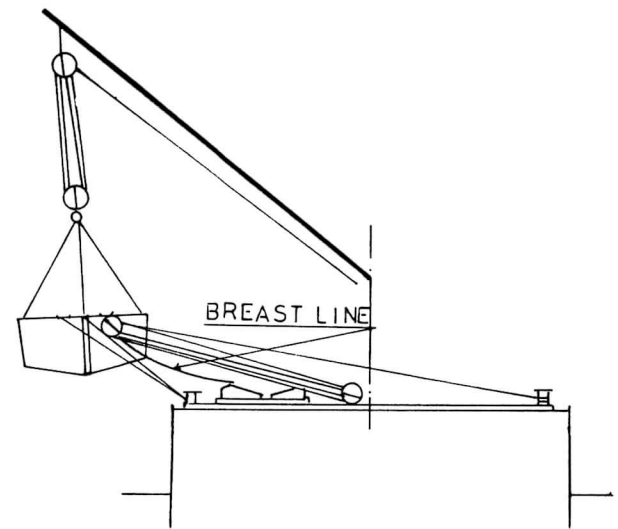
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MOORING A BOAT ALONGSIDE

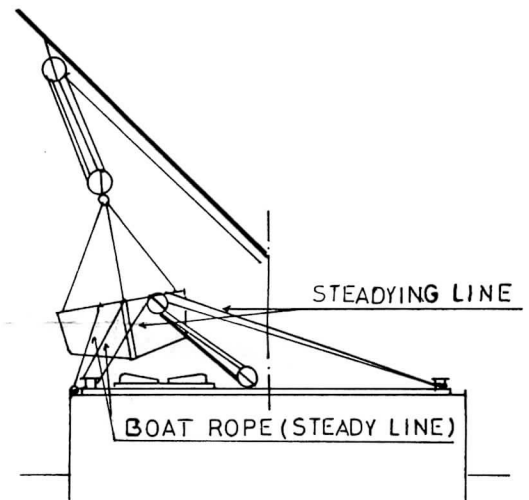
FORE



HOISTING UP



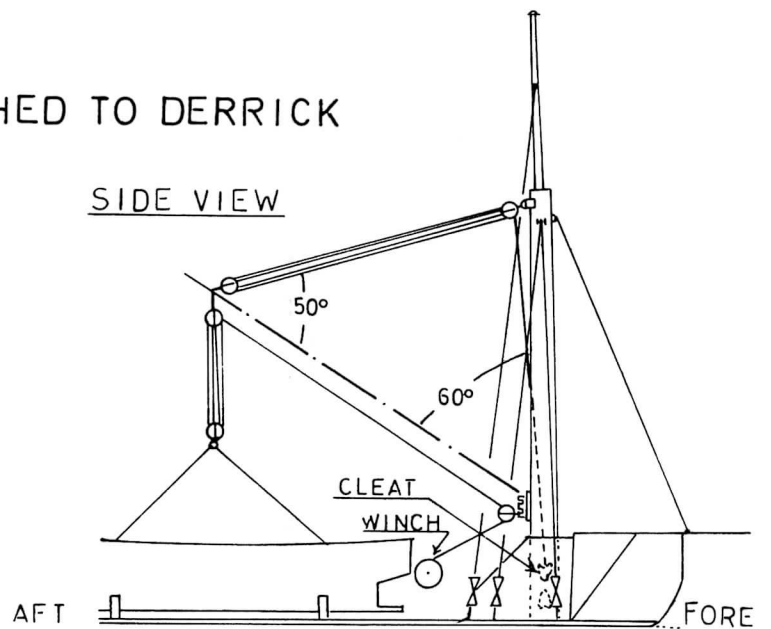
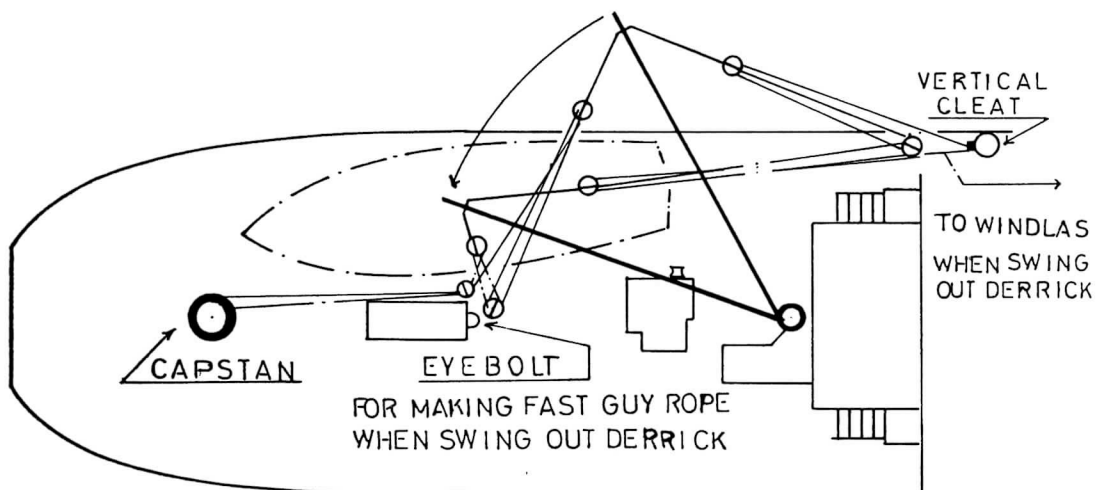
SWINGING IN



---/--- INDECATTE SHIFTING FROM A DOTTED LINE TO A SOLID LINE

LEAD LINES ATTACHED TO DERRICK

SIDE VIEW



AFT

FORE

was devised in consequence of getting into the situation which could not help relying to any other method than the common method of hoisting the boat as the ship was rolling in bad sea condition.

In essence, this method consists of the following two parts;

- (a) To prevent the boat from her sway, as it is being hoisted, by letting the ship proceed to the lee
- (b) To swing the boat inboard by the mutual action of the pulling tackle, the steady-ing line and the derrick

Hoisting on this method is in danger of meeting with a big accident such as losing the boat, as the ship is under her headway, so that even an error is not allowed in the work for hoisting.

For the old Kagoshma maru, it may have been the fact that the hoisting the boat was easy because of her low deck height, about two meters high on the water, but it is no exaggeration to say that hoisting on this method was made with success, as practices showed good result.

Last, the author who devised this method, hopes that this method is of any help to seamen and be applicable to any vessels.

Reference

- Austin M. knight (1959): "Knight modern seamanship" 12 Ed., 229-241 (D. Van Nostrand Co. Inc., Princeton, U.S. A.)