

# Deployment and Retrieval Procedures for Titanic's Center Bow Anchor

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## Introduction

Titanic primarily used her port and starboard bower anchors for anchoring the ship. Per regulations of the British Board of Trade, Titanic was required to carry other anchors in addition to her two main bower anchors. One of these required auxiliary anchors was the largest anchor on the ship. It 15.625 ton anchor which was carried in an anchor well at the bow end of the forecastle deck. This anchor has been known but the procedures for deploying and retrieving this anchor have never been enumerated. The purpose of this article is to attempt to enumerate the deployment and retrieval procedures in a step by step manner. While no written procedures have ever been found, it is possible to logically reproduce them by examining all the equipment available which could be used for these procedures. Certain minor aspects of these procedures may have been carried out in different ways or with different equipment but the procedures which will be proposed here are at least plausible for the tasks which need to be performed.

The format of this article will be different than other articles I have written. In this article an ordered list of procedures will be given for several separate areas: equipment, preparation for deployment, deployment and retrieval. Most items in the lists will be linked to reference photos or drawings.

## Equipment

### The Center Anchor

The center anchor was the largest anchor carried aboard Titanic. It was a Hall's patent stockless type. Its weight as found in the so-called Andrews Notebook was 305 cwt. – 1 qtr. These are British Imperial measure units. Cwt. is a hundredweight which is 112 pounds. Qtr. is one quarter of a hundredweight or 28 pounds. So  $(305 \times 112 \text{ lbs.}) + 28 \text{ lbs.} = 34,160 \text{ lbs.} + 28 \text{ lbs.} = 34,188 \text{ lbs. total}$ . A British ton or as it is known "long ton" is 2240 lbs. So to find the weight in tons of the center anchor we calculate 34,160 divided by 2240 to get 15.625 for the weight of this anchor in long tons.

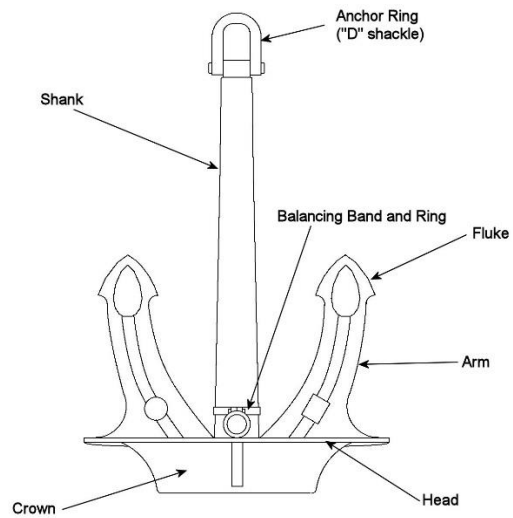
The dimensions of the center anchor are approximately 17 ft. long by 10 ft. 3 in. wide. To give an idea of the scale of this anchor, Figure 1 shows Britannic's center anchor being brought aboard for the first time by a yard crane.



Britannic's center anchor being brought aboard

Figure 1

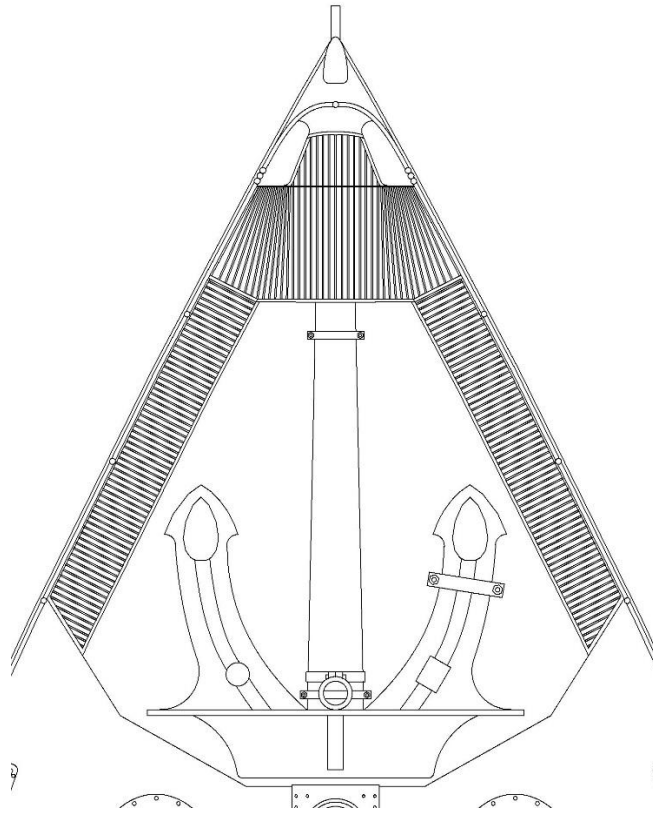
The parts of the center anchor which will be referred to in this article is shown in Figure 2.



Parts of a Hall's type anchor

Figure 2

Figure 3 is a drawing showing the center anchor in place in the forward anchor well.



Center anchor stowed in anchor well

Figure 3

## The Anchor Crane

One of the primary pieces of equipment used in the deployment and retrieval of the center anchor is what is referred to as the anchor crane. It can also be referred to as the anchor davit but for this article it will be referred to as the anchor crane. This anchor crane stood 21 ft. 6 in. off the deck. It had a turning radius of 16 ft. 6 in. The anchor crane was not powered. It turned on bearings which made it relatively easy to turn. Its purpose was to lift the center anchor from its bed in the anchor well and rotate it outboard. When under the load of the anchor, lines attached to the anchor crane to rotate it were pulled by capstans on the forecastle. The crane tackle used to raise and lower the anchor is also controlled by lines led to one of the capstans. Figure 4 shows *Olympic's* anchor crane.



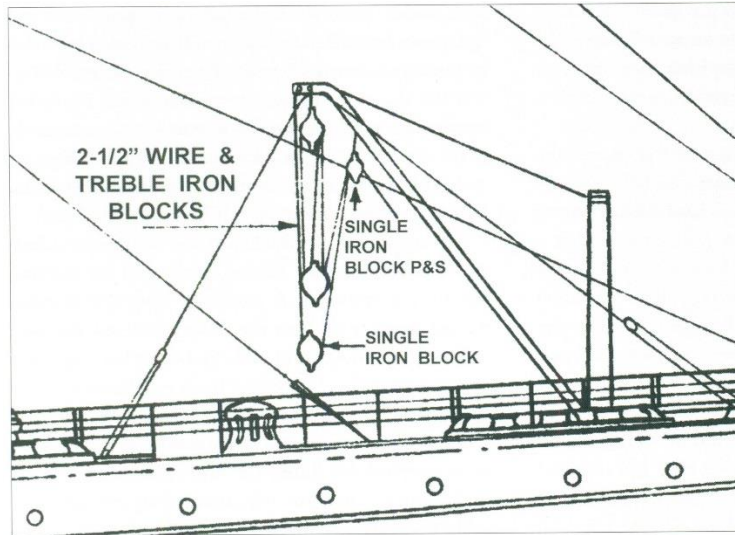
*Olympic's* anchor crane

Figure 4

### Rigging to the anchor crane

The rigging to the anchor crane is partially shown in Figure 5 of the *Olympic* rigging plan.

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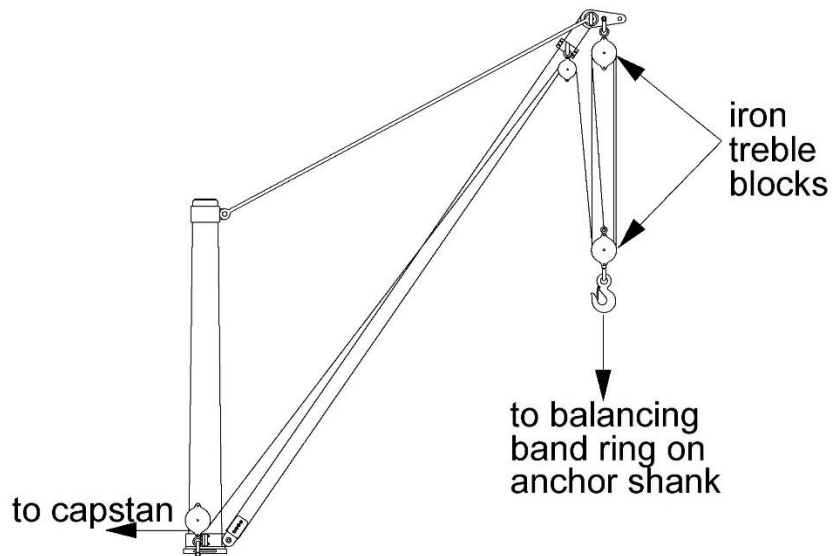


Rigging plan from *Olympic*

Figure 5

The rigging of the anchor crane looks complex but in reality it isn't. In order to simplify the rigging its three component parts will be discussed.

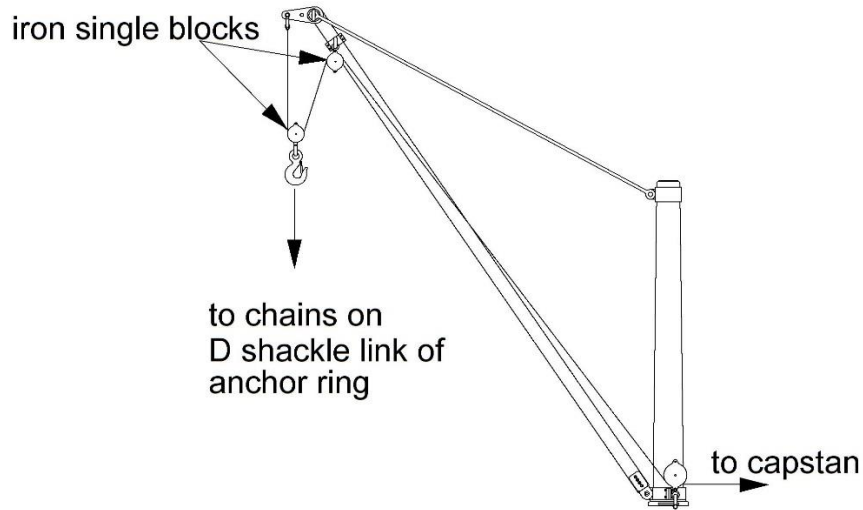
**The Hoisting Rigging** – This rigging consists of two treble blocks with two additional single blocks which act as sheaves to direct the hoisting line to a capstan. This rigging is shown in Figure 6.



Hoisting Rigging

Figure 6

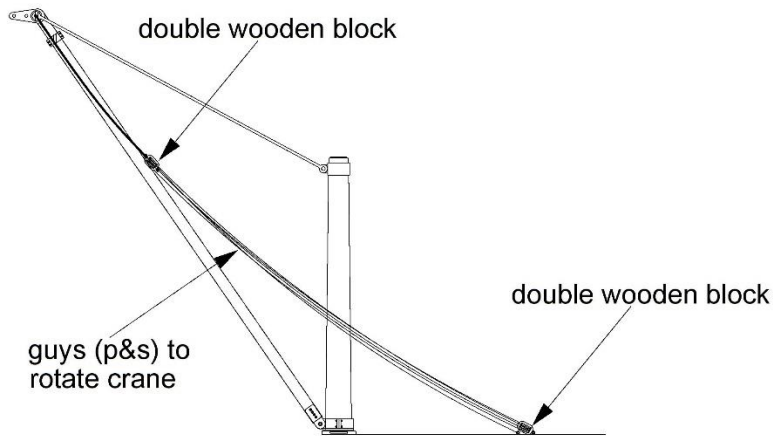
The Anchor Ring Rigging – This rigging consists of a single sheave block which attaches to the anchor ring at the end of the shank. Its function is twofold. The first function is to rotate the anchor shank upward so that it doesn't foul structures in the area of the anchor well. The second function is to provide a purchase point on the anchor shank to rotate the anchor when the anchor crane is rotated. The line from the single sheave block is also run through two single sheave blocks to redirect the line to a capstan. This rigging is shown in Figure 7.



Anchor Ring Rigging

Figure 7

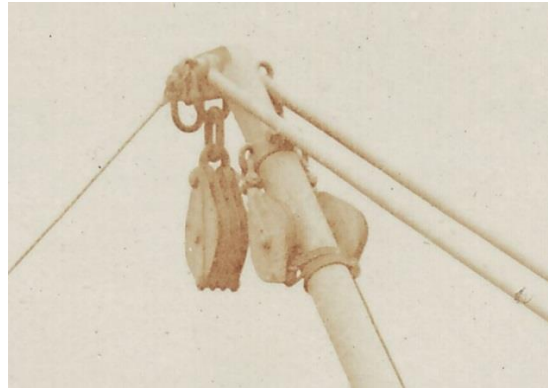
The Guys – The purpose of the guys is to rotate the anchor crane. There is a port and starboard guy tackle. The blocks are double sheave blocks. There are eyes in the plating at the deck level for the tackle to attach to which provides the best mechanical advantage when rotating the crane. Figure 8 shows one of the guys rigged.



Guy Rigging

Figure 8

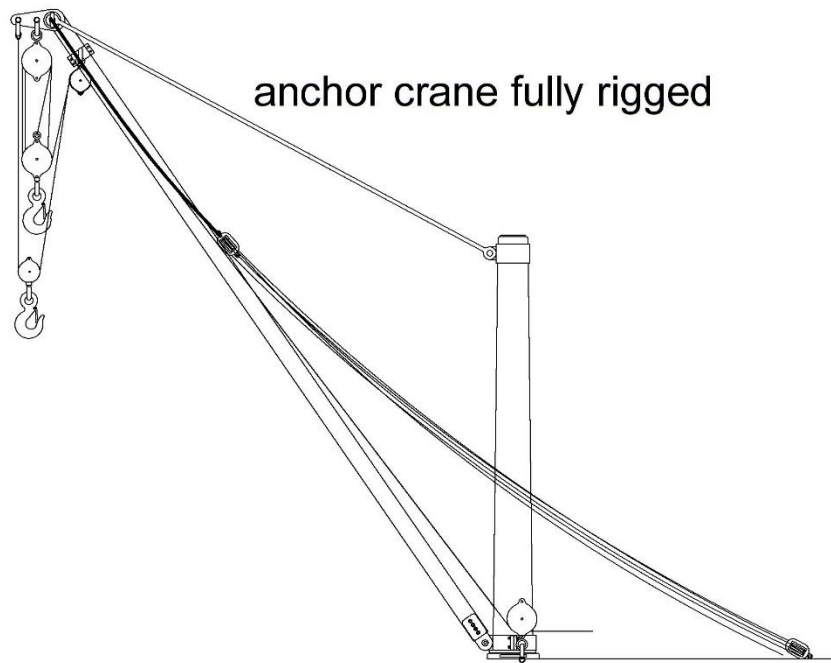
The single blocks which act as sheaves to re-direct the hoisting rigging line and the anchor ring rigging line to the capstans are paired on both port and starboard sides. The upper single blocks can be seen in figure 9.



Paired single blocks on crane

Figure 9

Figure 10 shows all the rigging to the anchor crane in place.

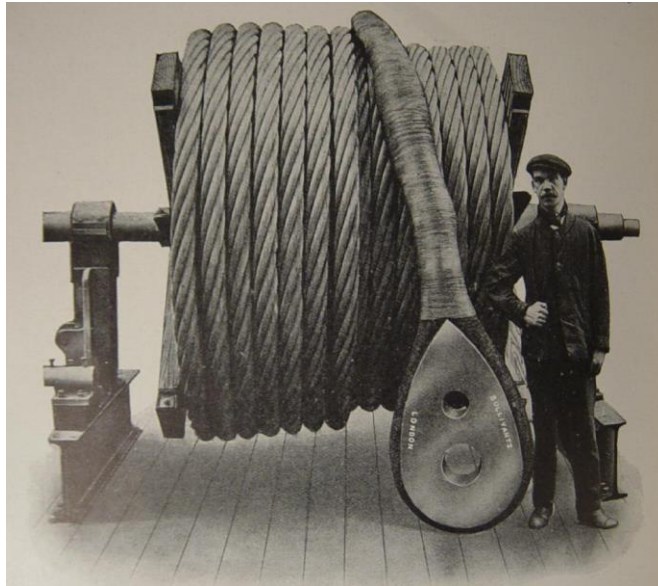


Complete anchor crane rigging

Figure 10

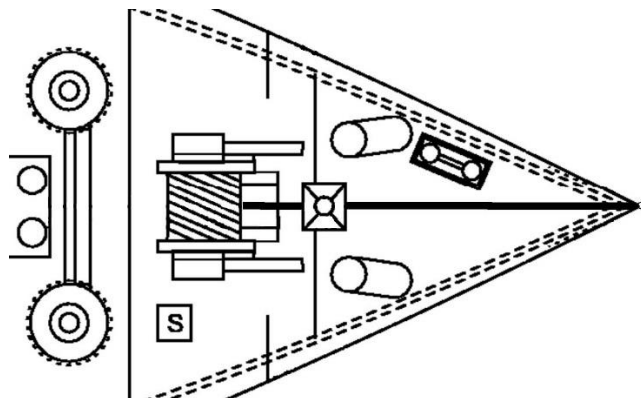
## The C deck hawser reel

On C deck forward just below the forecastle is a large reel on which was wound a 3 inch diameter wire hawser. This reel was powered by one of the steam engines on this deck which was used to power the windlasses. The hawser was used to lower and raise the center anchor once control was transferred from the anchor crane tackle to the hawser reel. Figure 11 shows this reel with hawser and the scale of it. Figure 12 shows a plan drawing of the reel and its location on C deck forward.



C deck hawser and reel

Figure 11



Plan of C deck forward showing hawser reel

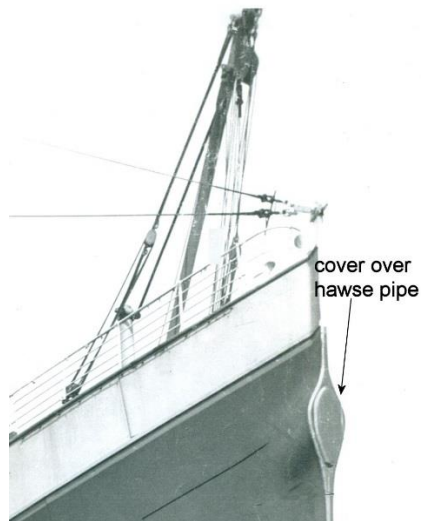
Figure 12



## Preparatory Procedures

### C Deck:

Cover over center hawse pipe is removed if in place. Figure 13

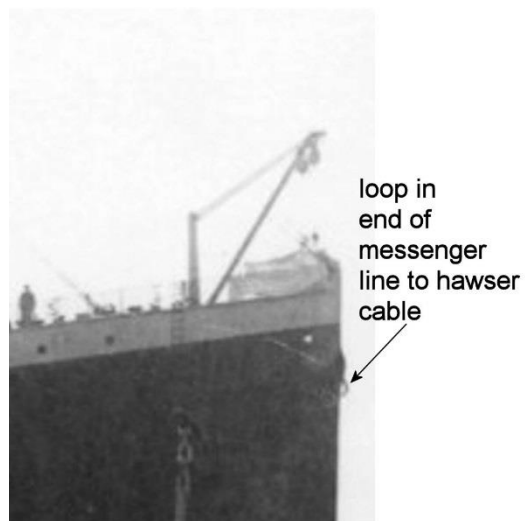


Hawse pipe cover

Figure 13

“Fishing line” with loop is fixed to hawser thimble.

“Fishing line” loop is put out open hawse pipe. Figure 14



“Fishing line” loop put out of open hawse pipe

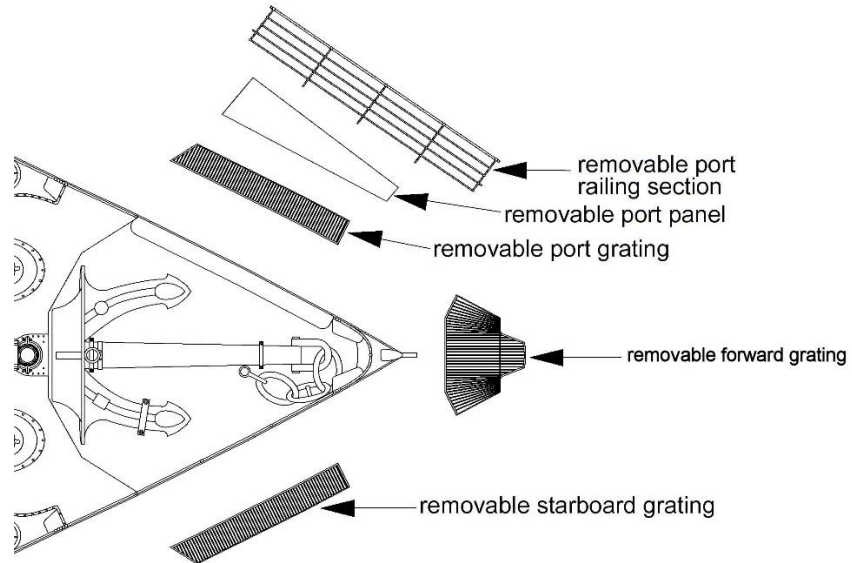
Figure 14

Forecastle:

Forward railing section removed on port side. Figure 15

Forward anchor well grates removed. Figure 15

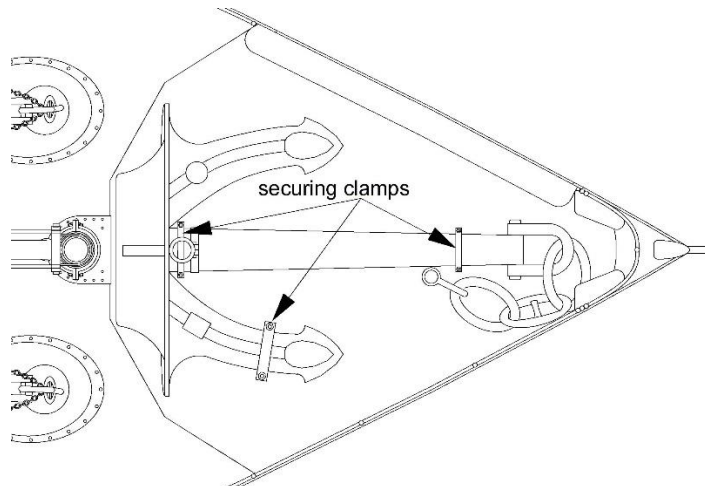
Port anchor well panel removed. Figure 15



Railings, gratings, and port access panel removed

Figure 15

Securing clamps removed. Figure 16

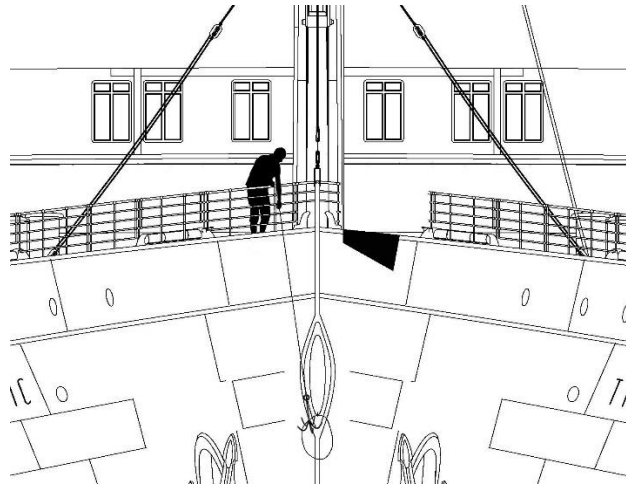


Anchor securing clamps removed

Figure 16

Anchor crane guys used to rotate crane forward in clockwise direction.

Grappling hook used to retrieve loop of “fishing line” connected to hawser. Figure 17.



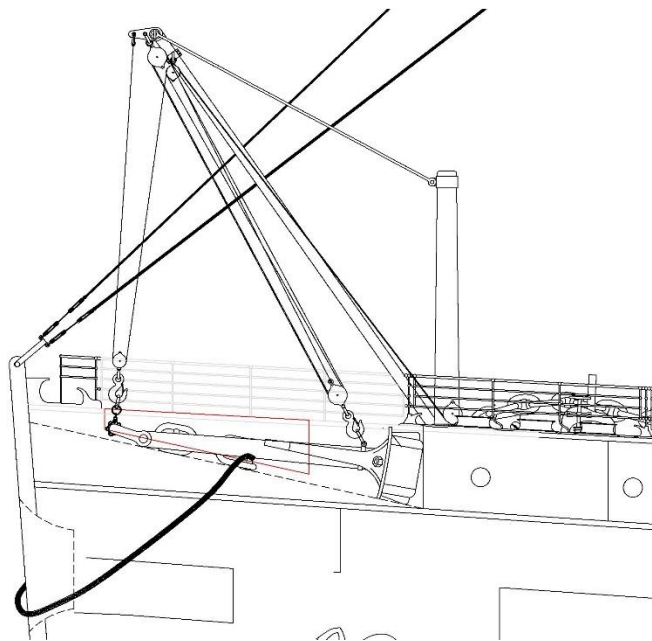
Retrieval of “fishing line” loop attached to hawser

Figure 17

“Fishing line” and hawser hauled by capstan until hawser thimble reaches anchor well.

Hawser thimble shackled to connecting links of anchor. Figure 18

Tackle rigged to anchor crane and attached to anchor. Figure 18



Hawser and crane tackle rigged to anchor

Figure 18

## Anchor Deployment Procedures

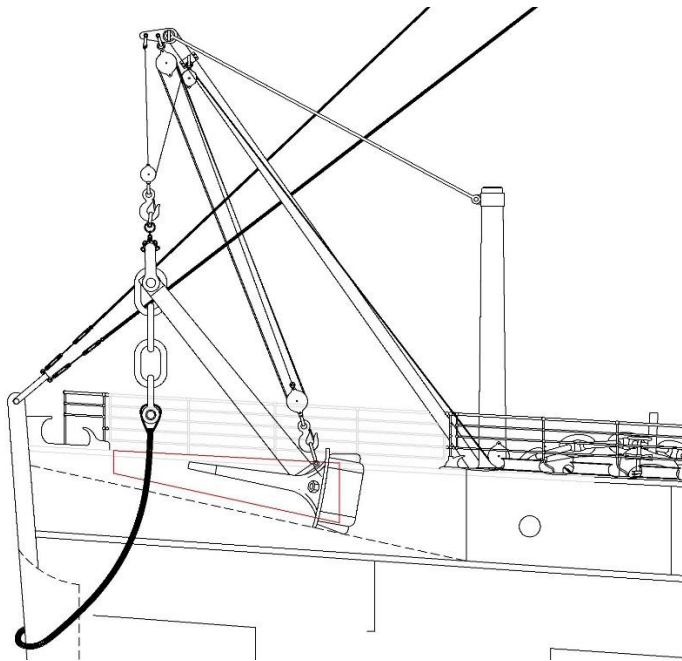
The procedures to deploy the center anchor were relatively complex due to the restrictions of space within the area of the anchor well. Rather than being ad libbed it appears that they would have had to mark positioning landmarks on the floor of the anchor well. Many would think that the anchor was just lifted by the anchor crane and swung outboard then dropped. In examining the limitations, this would not be possible. The movement of the anchor within the anchor well appears to be confined to movement along the floor of the anchor well. This may have been planned as a safety measure. Two things should also be noted about the anchor well. The port panel through which the anchor is brought outboard is smaller than the extent of the anchor well. Additionally, there is a heavy casting at the base of the opening which acts like the hawse castings on the side of the ship to protect the shell plating.

The steps to deploy the anchor will be given as a sequential set of steps. The positions of the anchor on the floor of the anchor well will have been pre-determined and are probably marked on the floor of the well deck.

### Step 1 –

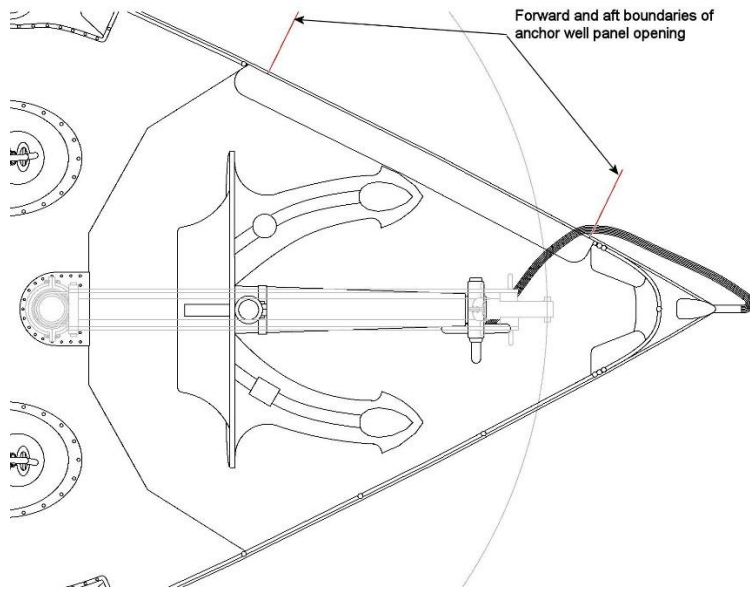
The shank is elevated to clear any surrounding structures by the anchor ring tackle. The shank is maintained at this elevation.

The hoisting tackle is hauled until the anchor is pulled forward to Position D1. Figures 19 & 20.



Anchor moved forward to Position D1

Figure 19

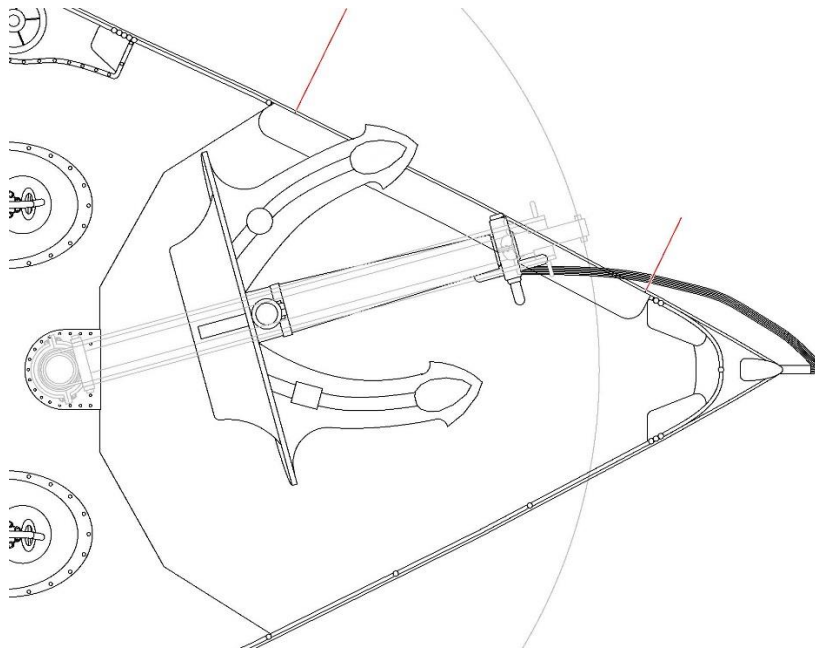


Anchor moved forward to Position D1

Figure 20

**Step 2 –**

The anchor crane is rotated which rotates the anchor to Position D2. Figure 21.

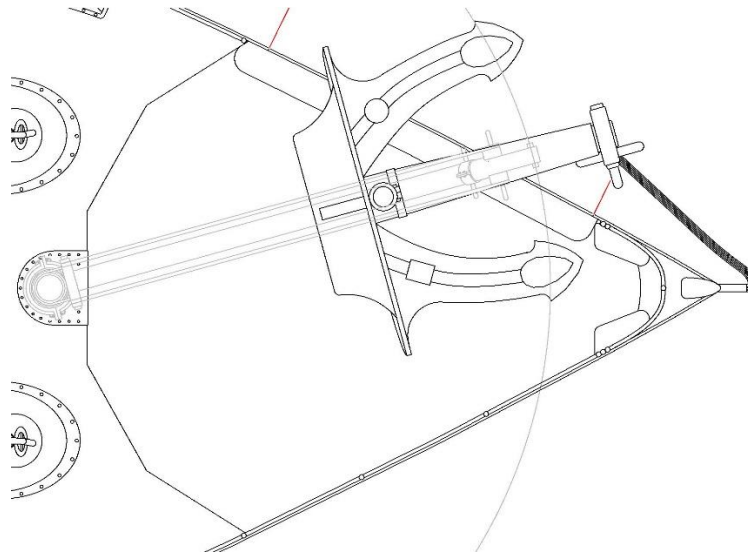


Anchor rotated to Position D2

Figure 21

**Step 3 –**

Anchor is hauled forward to position D3. Figure 22.

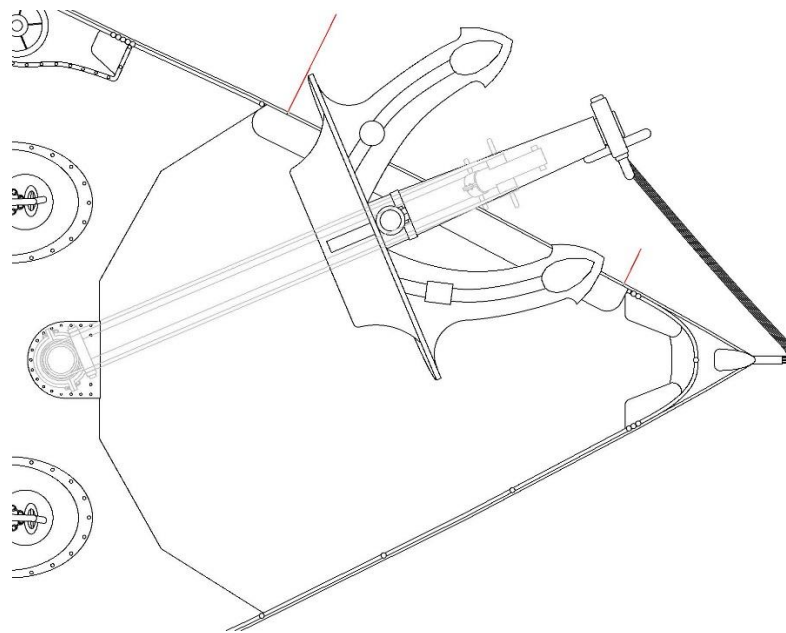


Anchor hauled forward to Position D3

Figure 22

**Step 4 –**

Anchor rotated to position D4. Figure 23

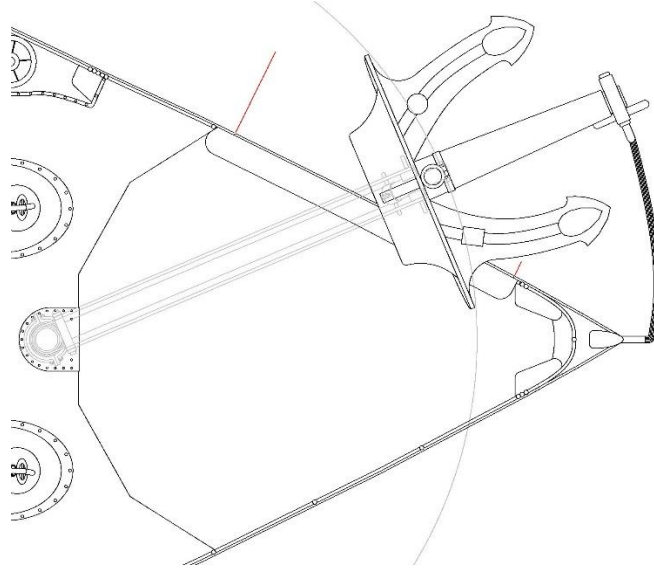


Anchor rotated to position D4

Figure 23

**Step 5 –**

Anchor hauled forward to Position D5. Figure 24.

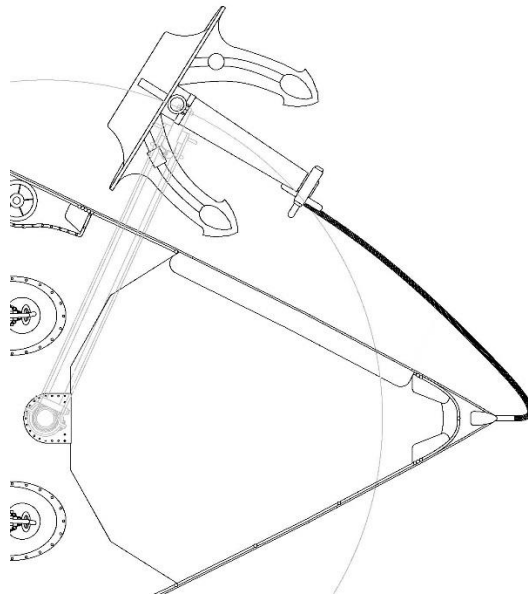


Anchor hauled forward to position D5

Figure 24

**Step 5 –**

Anchor moved outboard and shank rotated forward by hauling on the hawser. Figure 25.

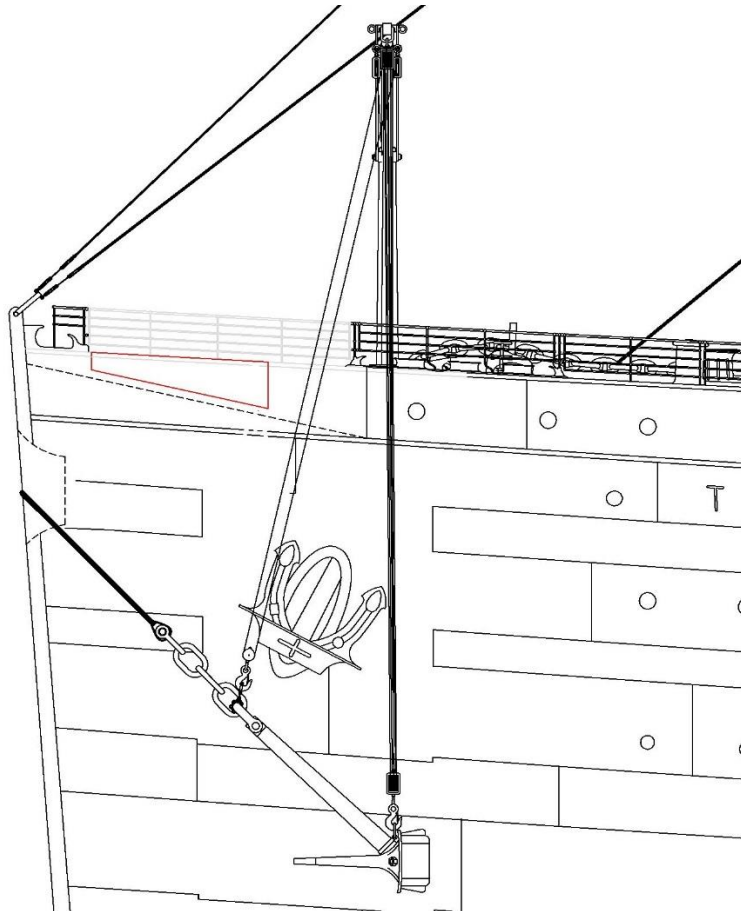


Anchor moved outboard

Figure 25

**Step 6 –**

Anchor is lowered to the point where it is below the position where the connecting links are below where their position will be when the hawser hoists the anchor to the position below the center hawse pipe. Figure 26.



Anchor and connecting links lowered below level of hawse pipe

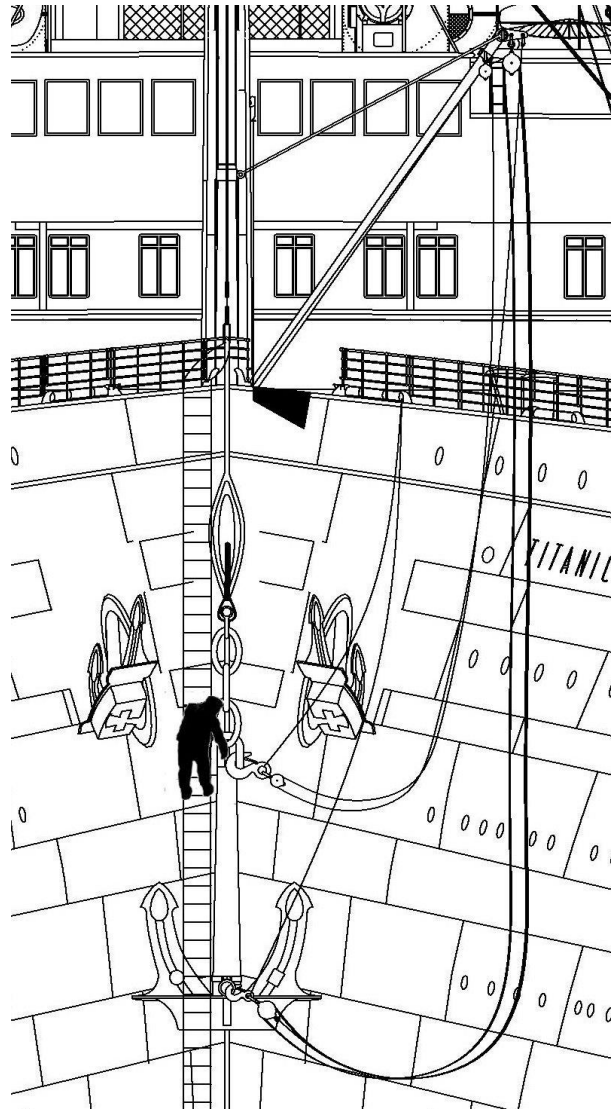
Figure 26

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### Step 7 –

Anchor is hoisted by hawser to position below hawse pipe. Jacobs ladder is rigged and crewman releases anchor ring rigging and hoisting rigging which are withdrawn to forecastle deck. Figure 27.



Anchor raised to hawse pipe and anchor crane tackle removed

Figure 27

### Step 8 –

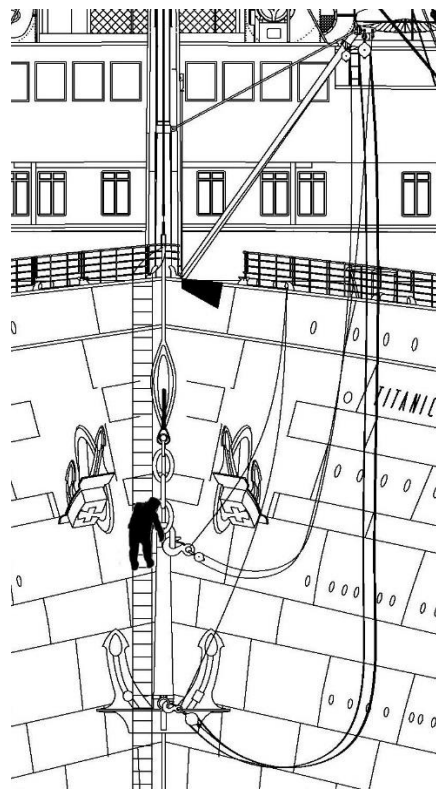
The Jacobs ladder and anchor tackle are retracted and secured. The anchor is then lowered under power (cable veered) and the necessary excess cable is paid out.

## Anchor Retrieval Procedures

The anchor retrieval procedures are reversals of the deployment procedures until the anchor is brought onboard. When the anchor is brought onboard, the anchor hoisting tackle is no longer used. Tackle is rigged to pull the anchor aft to its bed in the anchor well. The anchor ring tackle is still used to keep the shank from fouling nearby structures and to aid in rotating it. As in the deployment procedures, the anchor is moved to set positions with varying rigs of tackle.

### Step 1 –

The anchor is raised by the hawser to a position below the hawse pipe. The Jacob's ladder is lowered along with the anchor crane tackle. A crewman attaches the anchor ring tackle and the hoisting tackle. Also a chain sling with shackle is attached to the balancing band ring of the anchor. After this is accomplished the Jacobs ladder is retracted and stowed. Figure 28.

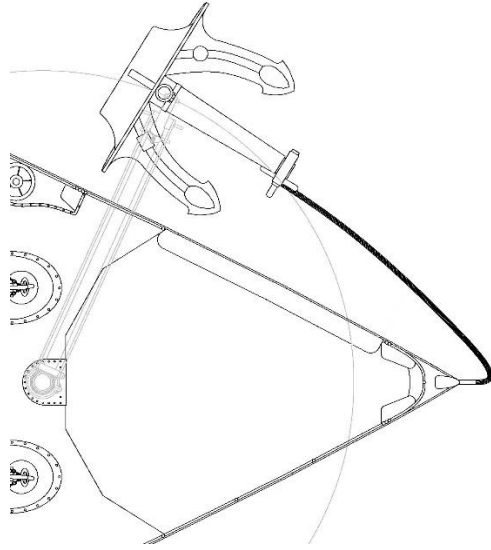


Anchor crane tackle rigged to anchor

Figure 28

### Step 2 –

The anchor is raised to its most outboard position by the anchor crane. Figure 29

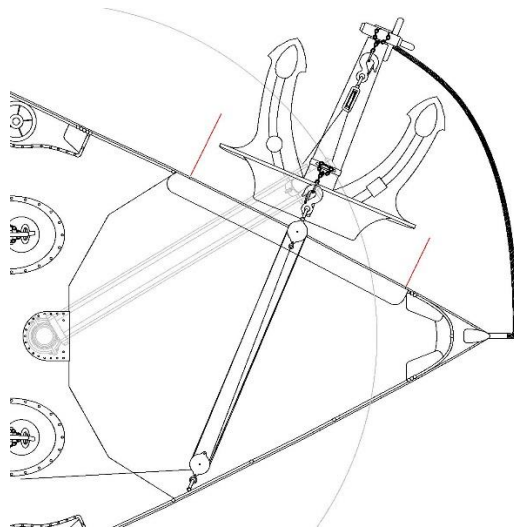


Anchor crane raised to its most outboard position

Figure 29

**Step 2 –**

The anchor is rotated with its crown facing the panel opening to the anchor well. Tackle is rigged to the chain sling on the balancing band ring to a padeye on the starboard aft area of the anchor well. Figure 30

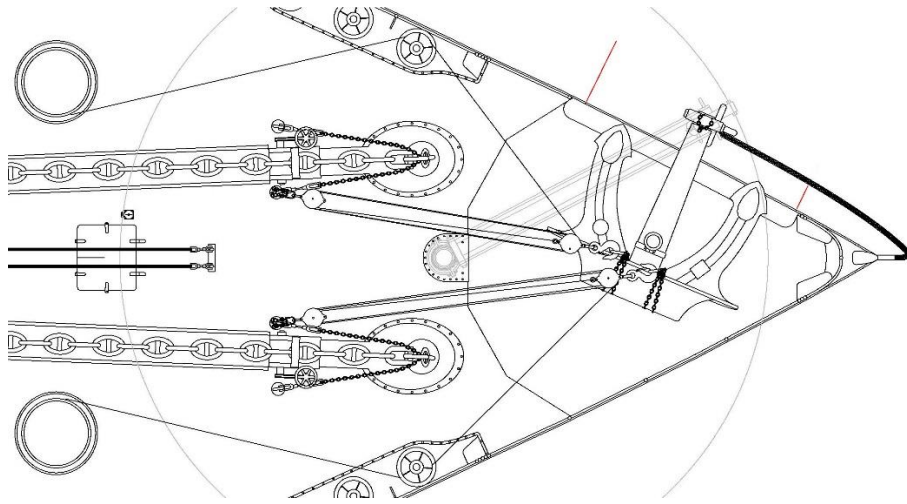


Anchor rotated and rigged to bring inboard

Figure 30

**Step 3 –**

The anchor is drawn inboard by the anchor well tackle to position R1. The anchor well tackle is unrigged as is the hoisting tackle. Two chain slings with shackles and tackle are rigged to the head and crown of the anchor on either side of the shank. Figure 31.

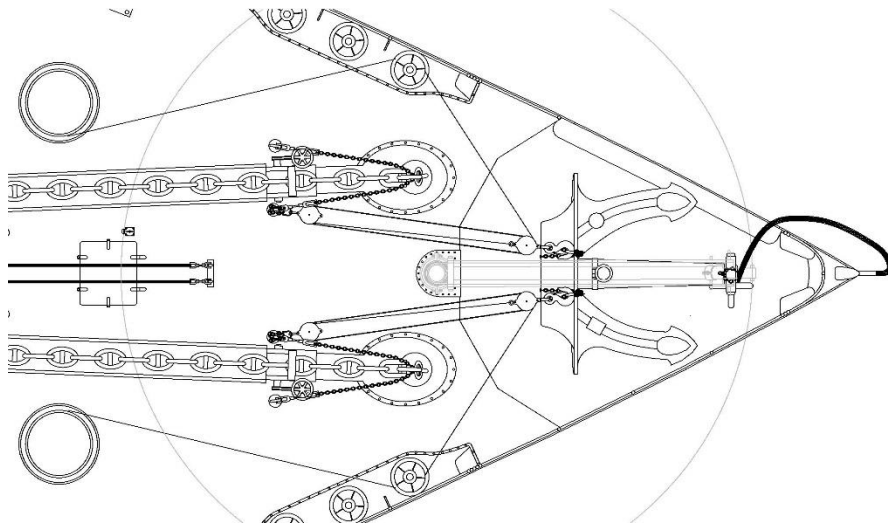


Hoisting tackle unrigged and retracting tackle rigged

Figure 31

**Step 4 –**

The retracting tackle is hauled and the anchor crane is rotated to bring the anchor to position R2.

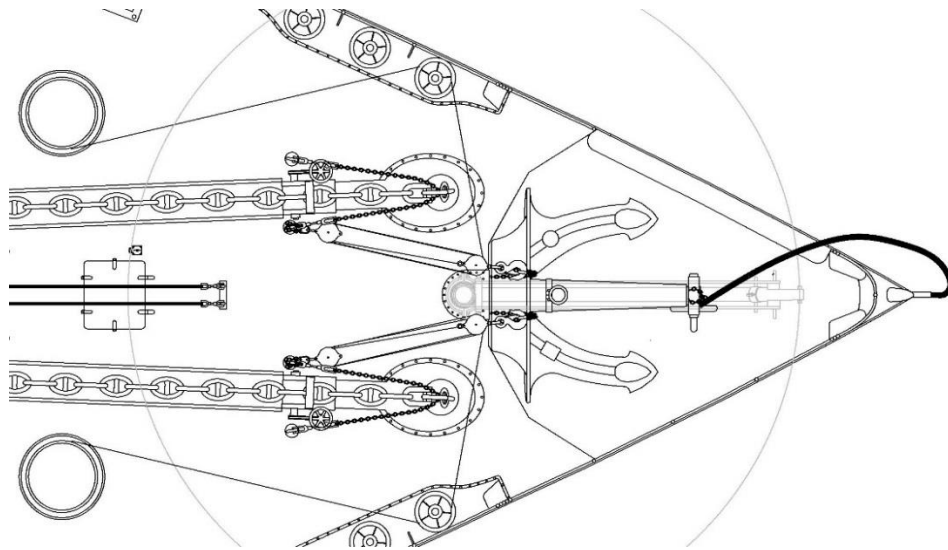


Anchor rotated to position R2

Figure 32

**Step 5**

Anchor hauled aft to its final position in the anchor well. Figure 33.

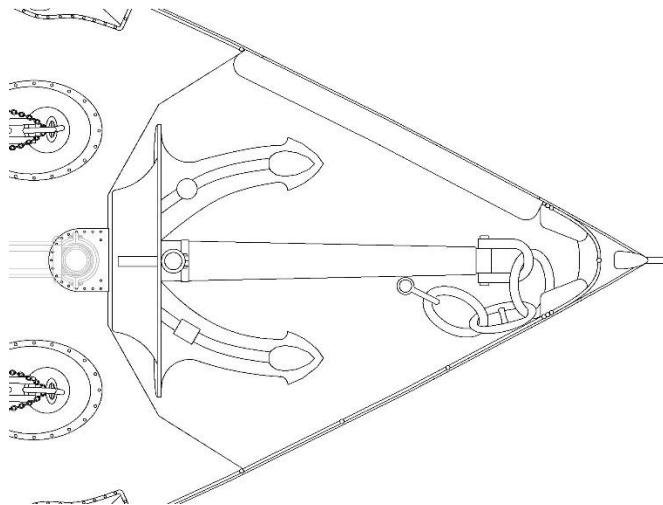


Anchor hauled aft to its final position

Figure 33

**Step 6 –**

Hawser thimble is removed from connecting links and is retracted through the center hawse pipe. The anchor shank is lowered to the deck with the connecting links laid on the starboard side of the anchor. The anchor crane is rotated aft and secured. All tackle to the anchor is removed. Figure 34.

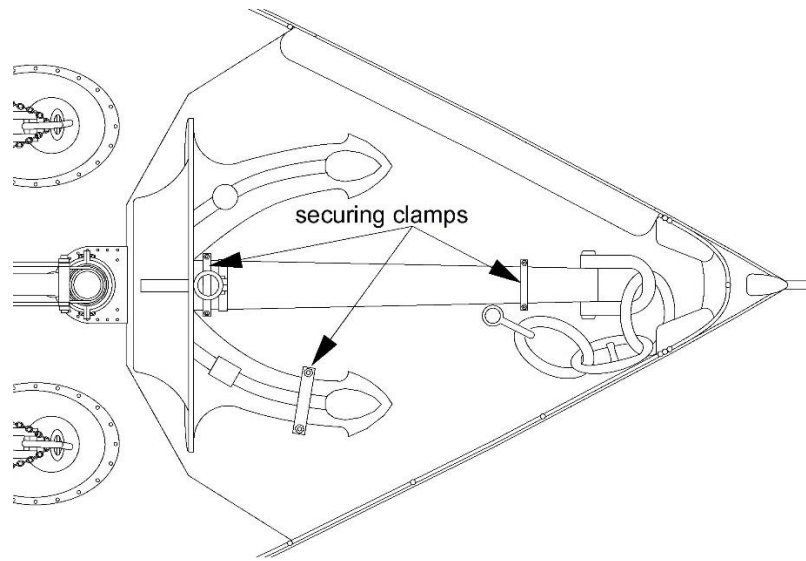


Hawser removed and retracted and all tackle removed from anchor

Figure 34

**Step 7 –**

Anchor securing clamps rigged. Figure 35.

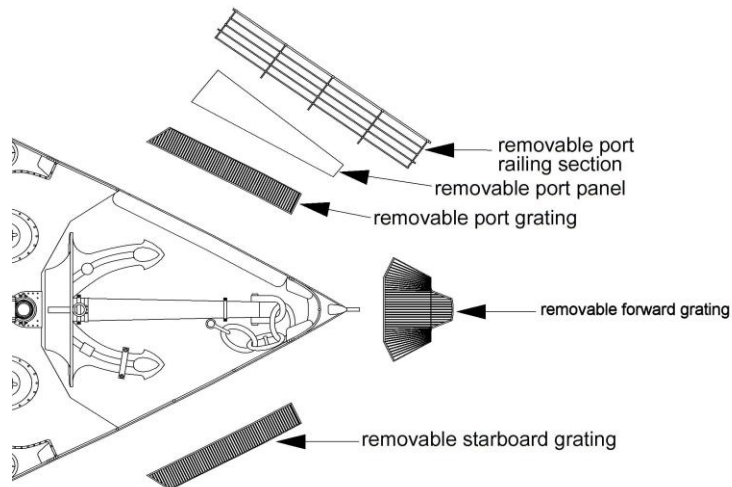


Anchor securing clamps rigged

Figure 35

**Step 8 –**

Anchor well access panel, anchor well gratings and port removable railing section rigged. Retrieval procedure is completed. Figure 36.

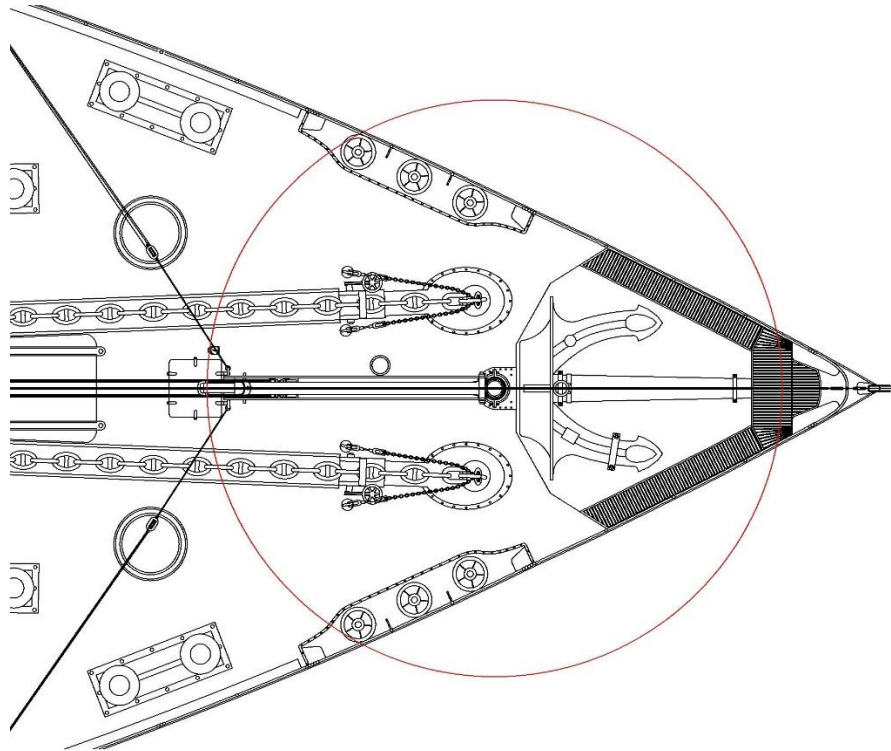


Anchor well equipment replaced

Figure 36

**Analysis**

In looking at the deployment and retrieval procedures outlined here one might rightly think that they are not very elegant. Without knowing the constraints of the equipment and anchor well one might think that you could just lift the anchor, rotate it outboard and release it. The piece of equipment that most constrains the deployment and retrieval of the anchor is the anchor crane. In Figure 37 the red circle shows the 16 ft. 6 in. operating radius of the crane. The anchor could only be hoisted at this radius.

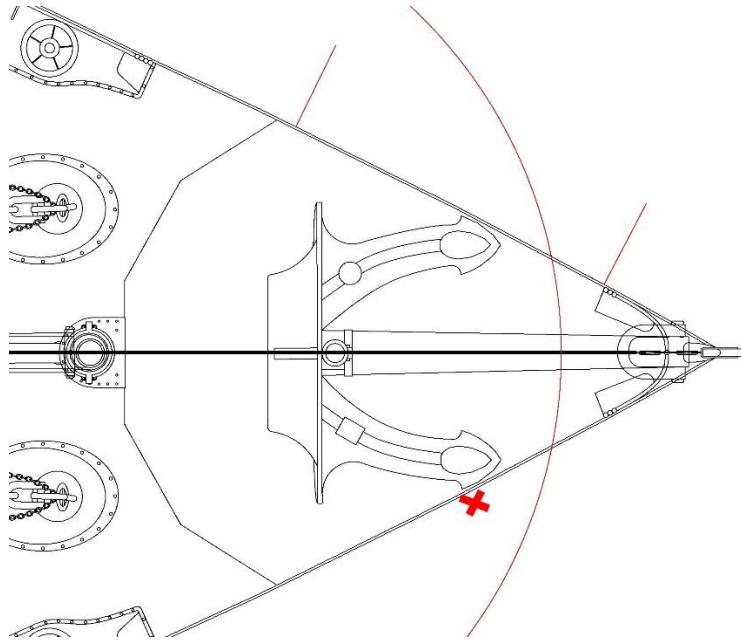


Anchor crane operational radius

Figure 37

Unless the balancing band ring by which the anchor is hoisted is moved to the operational radius, the anchor can't be hoisted. The hoisting tackle can move the anchor forward and the anchor ring tackle can rotate the anchor in conjunction with the rotation of the anchor crane. The problem is that the anchor can't just be moved forward so that the balancing band ring is at the operational radius where it can be hoisted. Figure 38 shows the limit to which the anchor can be moved forward. At this point the starboard fluke fouls the starboard bulkhead of the anchor well.

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Forward extent to which anchor can be moved forward

Figure 38

In Figure 38 the restriction imposed by the port anchor well panel can be seen. These are restrictions on deployment movements of the anchor. Retrieval introduces a whole new set of restrictions. Once the anchor is moved inboard the anchor crane can only assist in rotating the anchor. Additional tackle must be rigged to move the anchor inboard and aft.

The question might be asked why they would design such a laborious process to deploy and retrieve this anchor? The simple answer is that it was never designed to be used on any regular basis. It was incorporated in the design of the ship almost exclusively to satisfy regulatory requirements. As such, extra effort to deploy and retrieve the anchor was not considered important.

## Conclusion

The deployment and retrieval procedures of the center auxiliary anchor are complicated. The procedures outlined in this article had to work within the constraints of the anchor well and the available equipment. Consequently the procedures may seem rather involved. This anchor was never meant to be deployed quickly like the bower anchors. We have photos which indicate that this anchor *may* have been deployed on *Titanic's* sister ship *Olympic* but the photos only show preparatory actions and not actual deployment. Therefore we don't actually know if this anchor was ever deployed and retrieved. They may have had drills to prepare but beyond that we just have no evidence. The Board of Trade inspection may possibly have required deployment and retrieval but again that is not known. In the absence of documented procedures I wanted to attempt to outline the deployment and retrieval procedures of the



center anchor given the constraints of the anchor well and the associated anchor handling equipment.