The Structure and Function of *Titanic's* Anchor Chain Cable Compressors

by Bob Read, D.M.D.

Introduction

All of the material in this article regarding the chain cable compressors applies equally to all ships of the *Olympic* class. Many do not recognize the compressor as a distinct and separate piece of anchor handling equipment. There is very little of the external structure of the compressors which would indicate exactly what their function is or how exactly they operate. The purpose of this article will be to explain both the structure and function of the compressors. There have also been some misconceptions about how the compressors functioned which I will try to correct.

Nomenclature

Normally it is not necessary to belabor any discussion of the nomenclature of pieces of shipboard equipment. The problem with the compressor is that it has been referred to in the literature by many different names. Just a few of the alternative names found in the literature are compressor, controller, bow stopper, and riding chock. The reason the nomenclature becomes an issue is because when trying to do searches of patents or other references, there is no name for this device which appears to predominate. In the *Britannic* Specification Book the term "compressor" is used as can be seen in the excerpt from the book shown in Figure 1. Therefore, to avoid confusion the term "compressor" will be used in the remainder of this article.

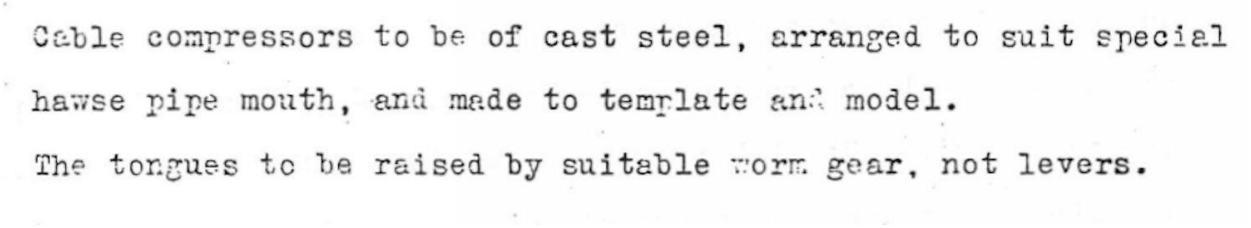
Cable compressors to be of cast steel, arranged to suit special
hawse pipe mouth, and made to template and model.
The tongues to be raised by suitable worm gear, not levers.

Figure 1

Structure

No patent was found for the compressors used on *Titanic*. The closest illustration of the structure of this type of compressor was found in the *Admiralty Manual of Seamanship – 1915.* The diagram and legend for the component parts is shown in Figure 2.

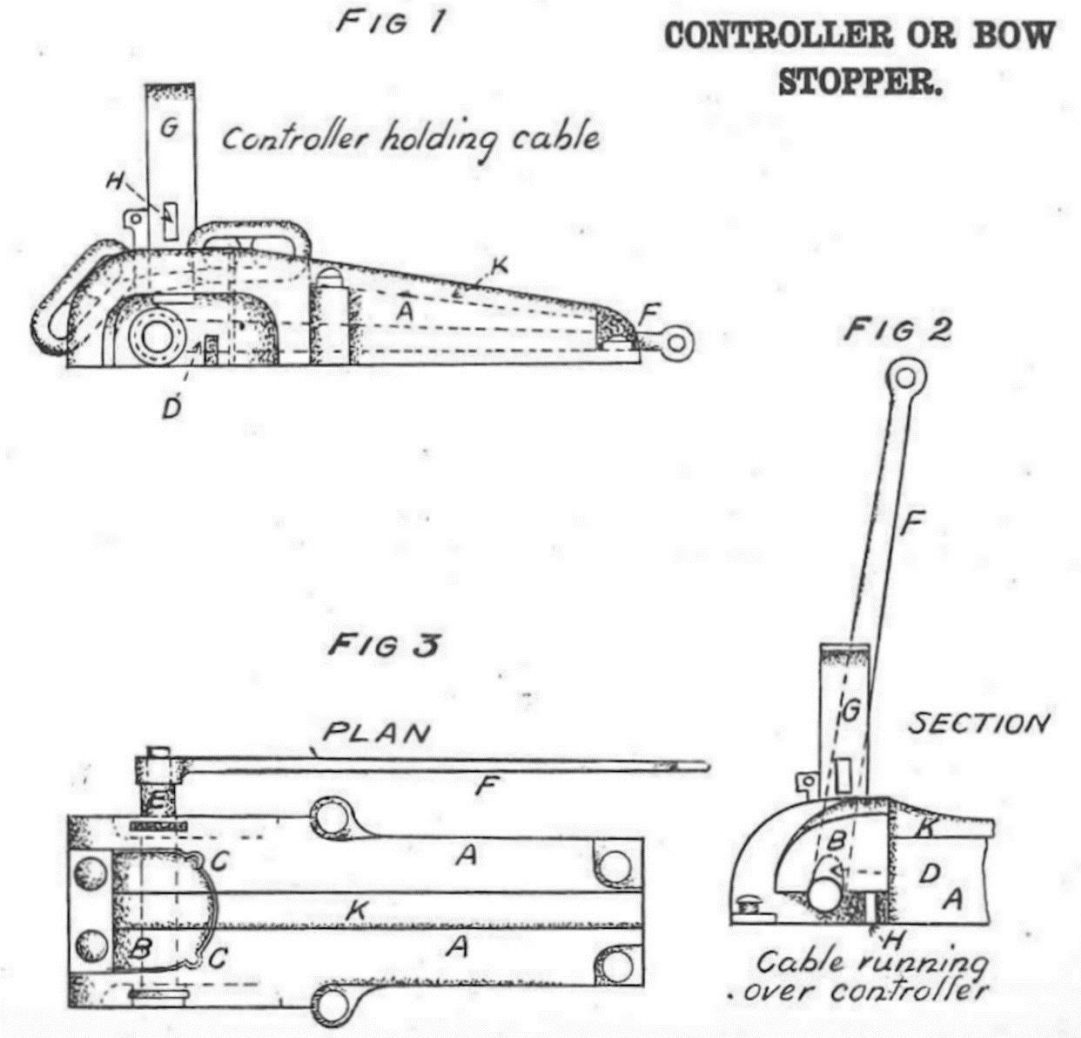

Figure 2

Legend for Figure 2

A – steel bed, B – “hoof”, C – horns, D – cam, E – shaft, F – lever, G – guard, H – fid, K – groove

Figure 3 show a photo of S. S. *Nomadic's* compressors.

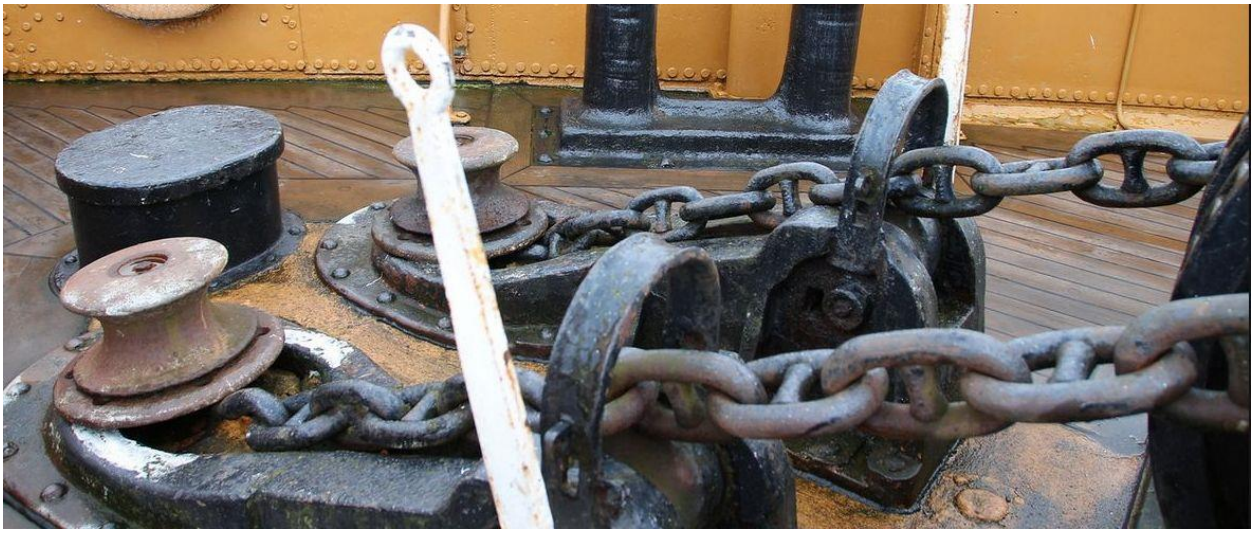

Figure 3

Figure 4 shows one of the compressors aboard *Britannic*.

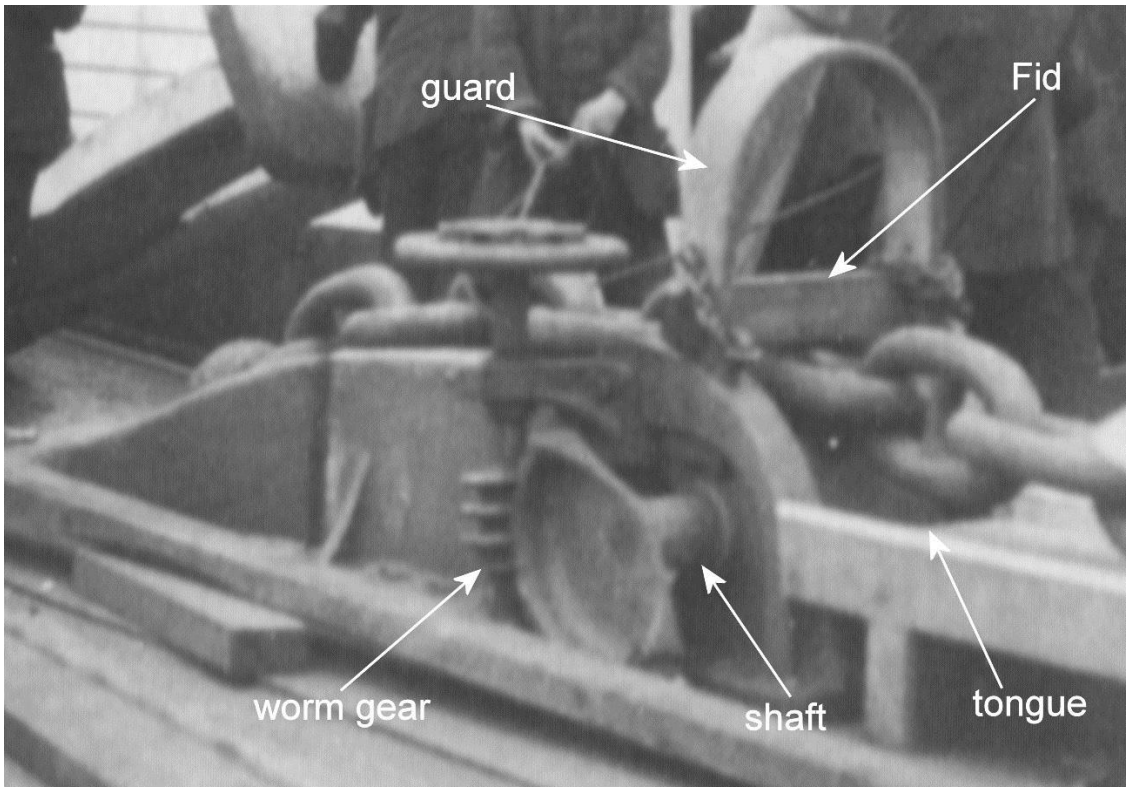

Figure 4

Figure 5 is a drawing of what I believe is a close representation of the compressors aboard *Titanic*. The drawing is an elevation of the port compressor.

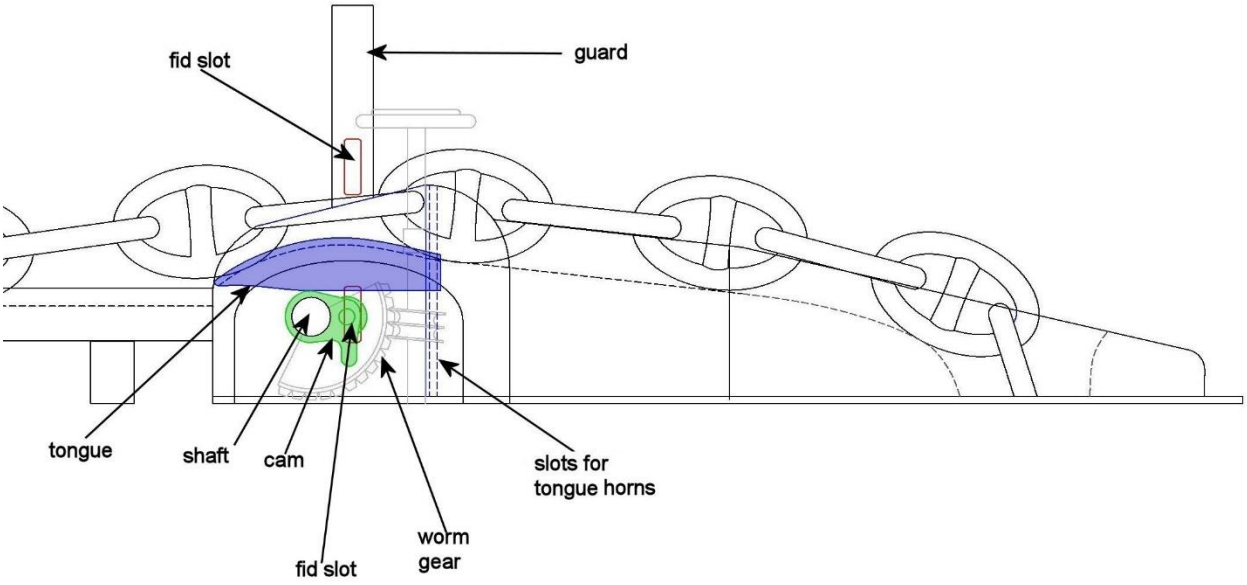

Figure 5

Figure 6 is a plan view of *Titanic's* port compressor with chain cable removed.

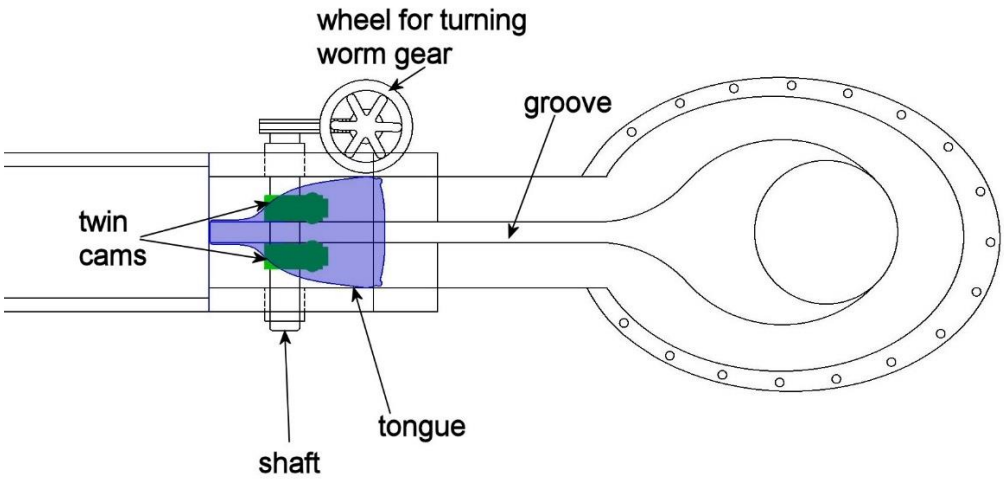

Figure 6

Several modifications are apparent in *Titanic's* compressor. The part which controls the compressor on *Titanic* is a wheel connected to a worm gear vs. the levers seen on the Admiralty diagram and on the *Nomadic* photo. Second, the Admiralty diagram shows that the levers raise

and lower what they refer to as a “hoof”. On *Titanic*, this part is referred to as a “tongue”. I believe this is not just a difference in names. It appears from photos that the tongue was different from the shoe. Figure 4 shows the tongue on *Britannic’s* compressor. It is narrower and designed to support a vertical link on its aft end.

Function

The primary function of *Titanic’s* compressors was to hold the anchor cable fast while riding at anchor. The windlass was capable of the doing this but the compressor allowed the strain to be taken off the windlass brakes while riding at anchor.

A second function of the compressor was that it could be adjusted to help prevent slippage of the cable while the anchor was being heaved in. When the anchor was let go, the compressor was adjusted so the cable would run freely over it.

To accomplish its functions, the compressor was adjusted between two operational positions. The first operational position was with the tongue of the compressor fully lowered. This is shown in Figure 7.

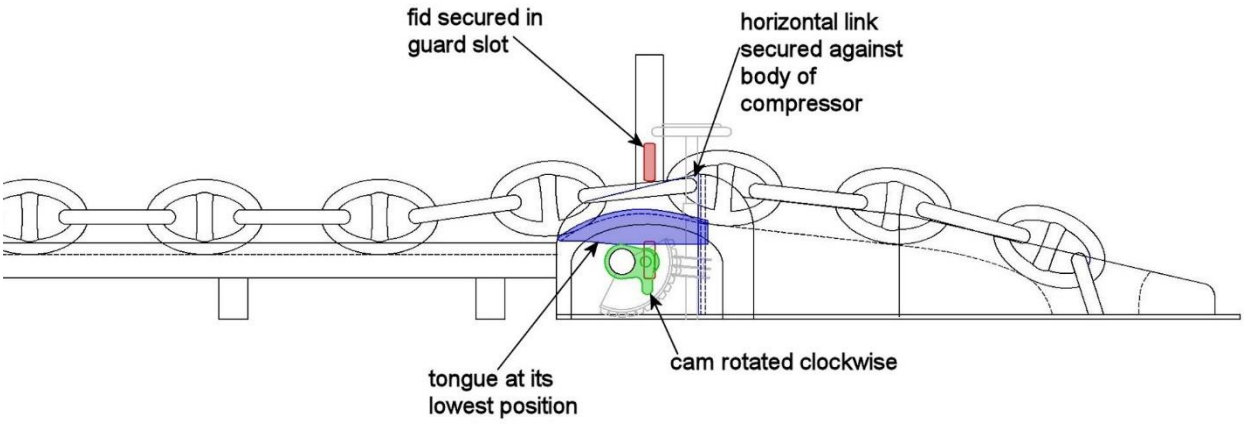

Figure 7

The worm gear control wheel is rotated clockwise which rotated the cams on the shaft which lowered the tongue. Once the tongue was lowered fully, the fid was inserted in the guard slot.

In this position two functions were possible. The first function was to secure the anchor cable while riding at anchor. In this position a horizontal cable link at the top of the compressor was in a position which prevented the cable from moving forward. The horizontal link was stopped against the interior of the compressor body. In order to prevent this horizontal link from rising, it was locked in position when the fid was placed in the slot in the guard.

The second function for this position is seen in Figure 8. The only difference here is that the fid is removed from the guard. In this function, the compressor is configured so that the cable can be heaved in and slippage of the cable forward will be minimized or prevented. As the

horizontal links pass over the top of the compressor, they drop down and are restricted from moving forward.

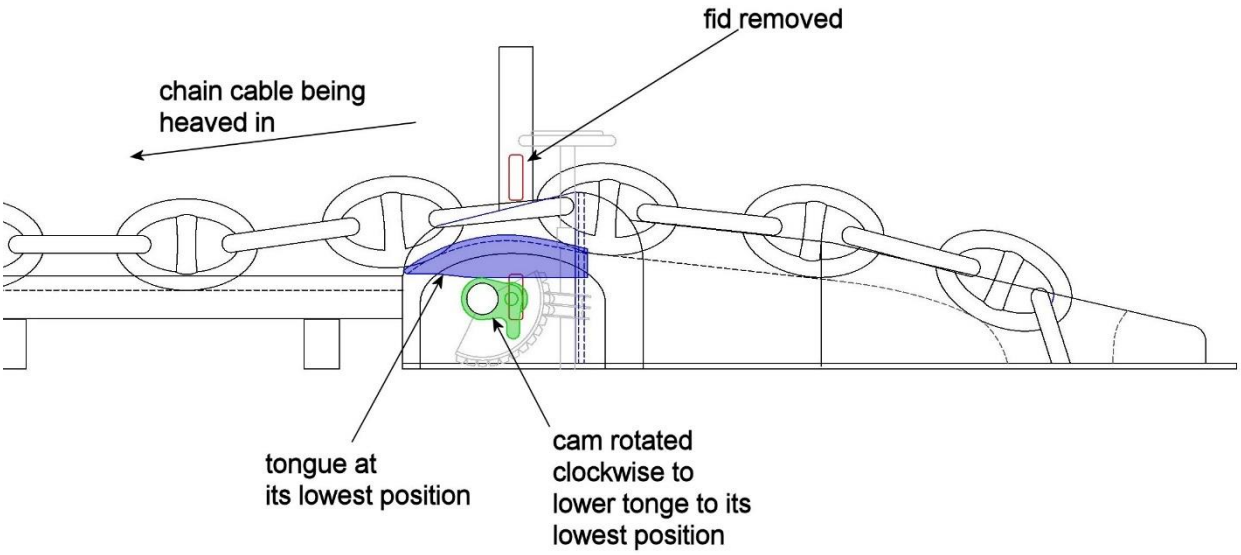

Figure 8

The second operational position is with the tongue of the compressor fully raised as can be seen in Figure 9.

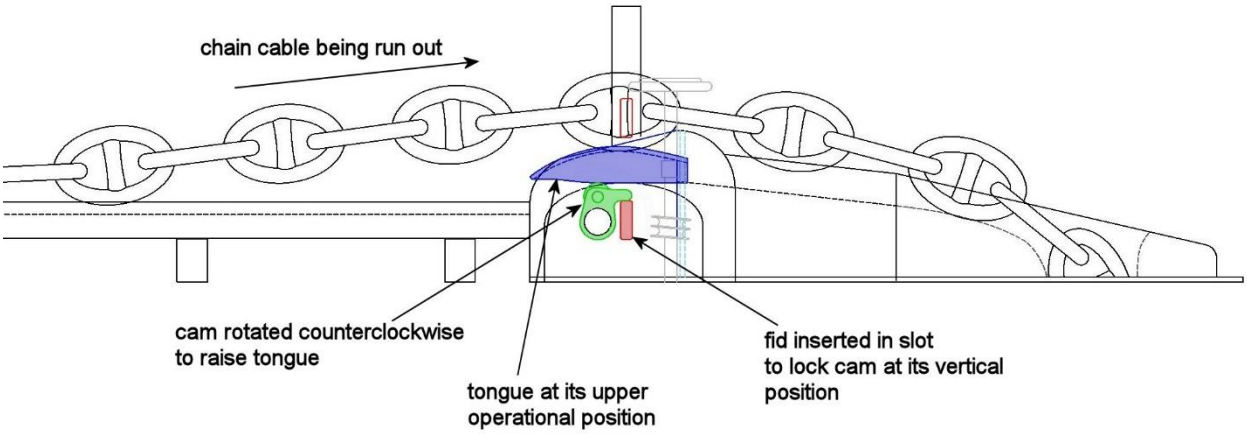

Figure 9

The worm gear is rotated counterclockwise which rotated the cams which raised the tongue. The fid was placed in the slot in the body of the compressor where it locked the cam in position and kept the tongue at its elevated position. This operational position was for the purpose of letting go the anchor and allowing the cable to run out freely without restriction.

When the anchor was fully heaved in, the cable was secured by anchor strops or “lashings”. These can be seen in Figure 10. When the lashings are rigged, the position of the compressor is

largely irrelevant because it is the lashings which bear the strain of the anchor cable. However the fid is not placed in the guard slot when the anchor lashings are rigged.

Figure 10

The Pawl Hypothesis

Some previous explanations of the operation of the compressors involved the use of a pawl in preventing slippage of the cable while heaving in the anchor. Under most circumstances this would require some kind of spring mechanism for a pawl to operate as it normally does. However, no evidence has been uncovered which would support this hypothesis. The compressors which are visible do not reveal the existence of pawl. Rather, they are closely aligned with the components and operation of the compressor of the design seen previously in Figure 2.

Conclusion

This article has demonstrated the structure and function of *Titanic's* anchor chain cable compressors. The diagrams and photos have been used to not only explain the structures and functions of the compressors, they also have been used to counter a previous understanding of the compressors as pawl operated devices.