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by ship modelers for ship modelers

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On the cover
Bomb Vessel Granado Cross Sectoin
By David Blake

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Editorial

Hello fellow modelers, another month has come and gone. I hope you are doing well on your current build or in some cases for those who are working on multiple projects at the same time.

This issue starts off with a different type of article than you are probably used to it's about metals used in modeling.

We then move on to Pat Majewski's continuing article series on the HMCSS *Victoria.* This month he presents his research on the Pivot Gun.

Next we get to view some pictures of modeler David Blake's cross section scratch build of the HMS Granado mid-ships.

In Mike Shanks Makerspace this month Mike gives you an introduction to CNC machines both large and small..

From there we move on to the second last article on Deck Furniture. Next month Bob Hunt rounds off this series of articles with an article on armaments.

This month we also include a kit review of Occre's Flying Dutchman also by Bob Hunt. Check out some of his views on this new model.

The last few items this month includes Shipwrecks of the World, The Modelers Workbench, Book Review and as usual Gene's Nautical trivia.

Until next time

May your ANCHOR be tight,
your CORK be loose,
your RUM be spiced,
and your COMPASS be true.

Winston Scoville

The Ship Builders Machines - Metals

A practical Guide

By Donald B. Driskell

We all know that ship building can come in so many mediums other than wood, such as of course from plastic to paper. All of us have seen it all. There are even metal kits of ships, but (sorry), I don't really classify that as an item that to be considered. I know those "metal kits" can be fun, but that is about it and they can be put together in about 30 minutes to an hour.

But, besides all that, this article is more about types of metals. Now, it is highly unlikely that you will have to reach for a rod of stainless steel for your ship build.

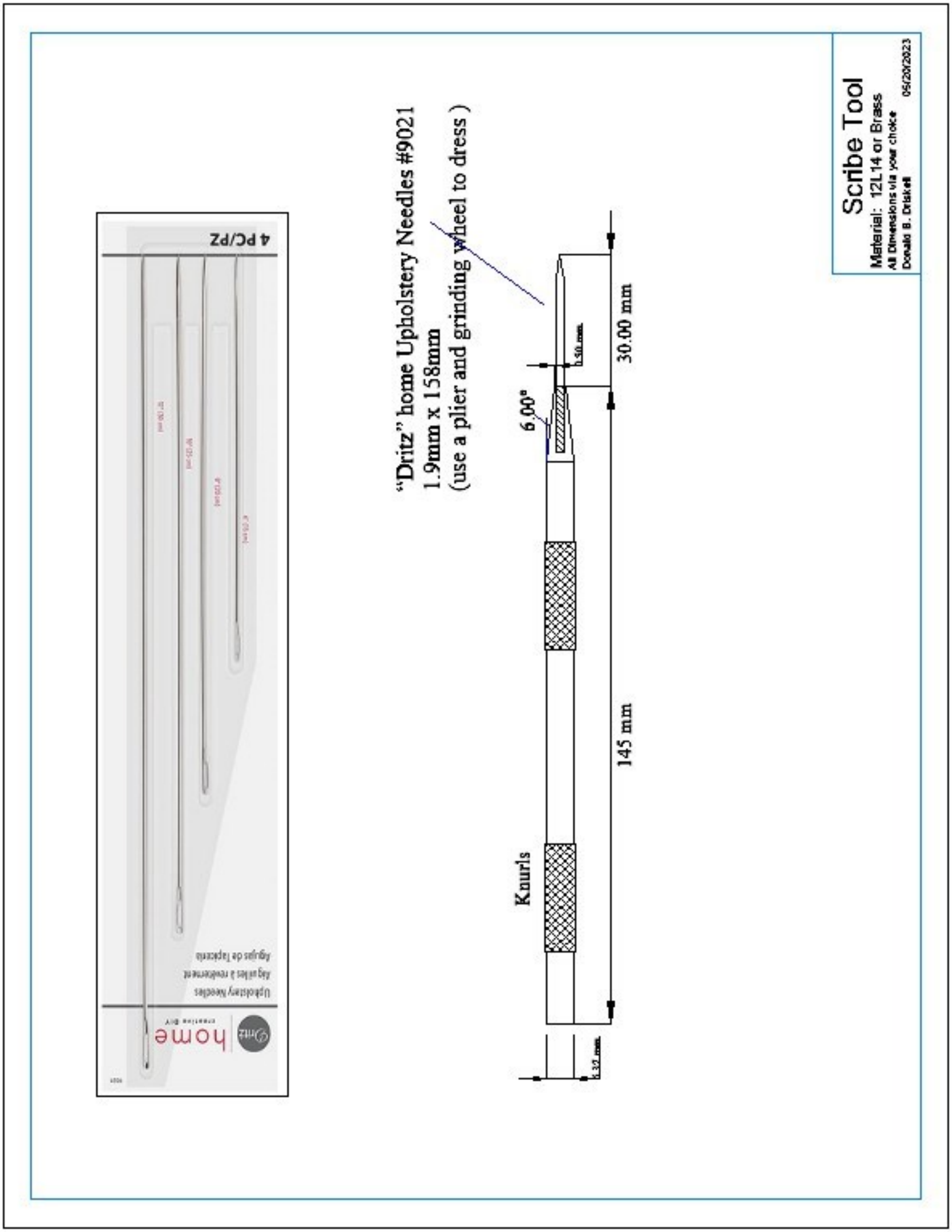
Image by pixabay

So, this article is more about getting off the track a little bit and helping you discover the different kinds of metals just in case you feel the urge to make a tool for your shop.

There are all different tools, jigs and whatnot you can make that can help you with your ship building.

Case in point, is I am including a very simple drawing of a scribe. This scribe can be used to mark holes for the placement of treenails or scribing lines. It has almost unlimited uses for your shop. One of the things I have always wanted to make are machinist clamps, but to date, I still have not gotten around to it.

The next page is an image of the Scribing tool and as anything else, this is just an example to get you going—it can be modified to any shape or form you desire. The Scribing tool does have "Knurls" that is if you have a Knurling tool. The angle of the tip is about 6 degrees and even that can be changed to your desire. At the moment, my lathe is down for maintenance and I am in the process of getting it up and running so that I can demonstrate how to make the scribe. If that process comes later, then the Journal will post a link to YouTube at a later time. My apologies for this inconvenience. The actual scribing end (needle) is from a set of Upholstery Needles. I am using "**Dritz" home Upholstery Needles #9021** which can be found at most any craft store or at amazon.


Scribe Tool
Material: 12L14 or Brass
All Dimensions via your choice
Donald B. Driskell
05/20/2023
"Dritz" home Upholstery Needles #9021
1.9mm x 158mm
(use a plier and grinding wheel to dress)
30.00 mm
6.00°
145 mm
Knurls
4 PC/PZ
home
Upholstery Needles

However, before I go any further take into consideration that if you have never machined any type of metal, there are two metals that I highly suggest to start out with.

Brass is the easiest and the most forgiving to machine. It is a very soft metal and provides a beautiful polished finished. Next would be a Carbon Based metal 12L14. It is also a forgiving metal and also can be polished to a chrome like finish.

Note: as a side note, if you are just starting to learn how to operate a lathe, I highly suggest get a rod of Acetal Round Rod (Copolymer) or a Rod of Polypropylene. These are excellent practice materials and also for prototyping before choosing the metal you wish.

There are several Metal Shops online you can buy from in case (like me), I don't have immediate access to different kinds of metals.

https://www.onlinemetals.com/

https://www.speedymetals.com

https://hobbymetalkits.com/

https://www.mcmaster.com/products/raw-materials/

Online Metals and Hobby Metals offers "protobox" and "kits" that come with a variety of bars, square stock, and plates instead of trying to choose individual pieces and can be a little less expensive overall.

Alas, one more note to make mention of and that is the difference between Hot Rolled and Cold Rolled.

The main thing is this: Hot Rolled is used in Fabrication and building construction and is raw and unfinished, such as angle iron, structural buildings and welding. Cold Rolled is going to be the choice for your precision machined parts and tools and will come with somewhat of already a smooth finish ready to be turned or milled. This is just a sample of common metals in hobby use.

1. Steel (cold rolled)

12L14 The addition of lead increases the ease of machinability.

1018 is a general purpose commonly available steel. It can be easily turned, milled, and even welded and fabricated.

2. Tool Steel (drill rod)

It is a term used for a variety of high-hardness, tough, impact and abrasion resistant. It is used for punches, dies, knives, drill bits. They usually comes in exact measure ments and for heat treatment. For further reading, you can search for these "Types": A, D, H, O, P, S and W.

3. Stainless Steel

Stainless Steel as the name suggest has excellent corrosion resistance. It is going to be somewhat harder material to machine.

303 is used for like Screws and Bolts and is nice for your projects as well.

316 This is a marine grade steel, also for food processing to hospital equipment.

4. Chromoly steel

4140 is for high strength and toughness, stressed parts and for hardening.

4130 bolts and shafts , aircraft parts, roll cages, etc.

5. Aluminum

6061 This is the most versatile of the aluminums and easily machined.

6. Brass

360 This is the most common of the brasses.

7. **Bronze 932** (bushings, bearings and mostly used in plumbing)

HMCSS Victoria'

Pivot Gun

By Pat Majewski

This is the second of several articles in a series relating to HMCSS *Victoria's* armament and naval ordinance of the mid-19th century. Where appropriate, some discussion relating to the selection of her ordnance and the research undertaken in resolving the design and implementation of the armament is included. This article concentrates on the pivot gun and its carriage as fitted in the vessel.

Gun and Carriage Identification

The Specification does not identify the type of gun or carriage fitted, but simply informs that pivot guns were to be fitted forward and aft. The description for their location is ambiguous, as they could be placed anywhere forward or aft on the upper deck using the main mast or funnel as the midship reference point. Multiple contemporary newspaper reports, and magazine articles confirm that while pierced for two pivot guns, only the forward gun was ever fitted.

A contemporary lithograph, titled 'H.M. Colonial Steam Sloop *Victoria*', and the profile photograph of the ship shown in earlier articles, provide glimpses of the forward pivot gun barrel above the roughtree rail on the forecastle. From this evidence, it can be determined that the forward pivot gun was located forward of the foremast.

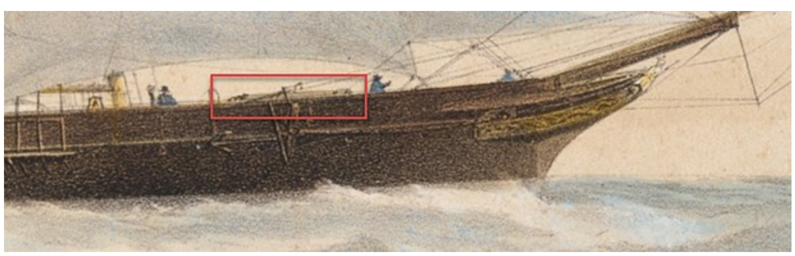


Figure 1 – 32-pounder Pivot Gun fitted in HMCSS Victoria

Crop of Ashbee & Dangerfield & Taylor, John D., & Ackermann and Co. 1864
H.M. Colonial Steam Sloop *Victoria* – State Library of *Victoria* – Image AN7946252.

Several line items listed in a survey of the stores held by HMCSS *Victoria* reported 17th December 1858, identify relevant items held in the Gunners Stores that help to identify the type of pivot gun carriage fitted. Among these were:

- Iron transport axle.
- Quoins x 9.
- Flap for pivot gun (assumed to be a spare).
- Pivots - Metal Screw x 9.
- Pivots - Solid x 9.
- Metal plates for Pivot x 2.
- Side Tangent Scales (different scales for various degrees of elevation)
- Sights Fore x 3, Hind x 3, Tangent Metal x 3, Wood x 2, 1 spare (not specified) – noting *Victoria* only carried 3 guns at this date.

- Stops, compressor ropes x 2.
- Tubes – detonation x 37, Friction x 72.

Barrel Pattern

The Specification and associated correspondence inform that a Smooth Bore Muzzle Loading (SBML) barrel was fitted but does not identify the pattern of the barrel. Analysis of contemporary gunnery related publications allowed a determination that the pivot gun barrel was probably a Blomefield pattern, bored out and modified on the plan of Lt.-Colonel Dundas (then Inspector of Artillery).

This conclusion was formed as the Blomefield/Dundas gun was the only pattern of gun that matches the 'Long Tom' parameters of 32-pounder 56-cwt, 9' 6" length listed in a list of Service Guns, in the contemporary 'The Artillerist Manual', by F.A. Griffiths, 1868. An extract is shown at Figure 2.

According to Wikipedia, the Blomefield 32-pounder 56-cwt remained popular until the 1860's. The 'Committee on Ordnance' reported that at the end of March 1857, there were 1961 of these guns in use and 1733 in store.

LIST OF SERVICE GUNS, AND AMMUNITION—*continued.* 60 LIST OF SERVICE GUNS, AND AMMUNITION. [PART III.

		SMOOTH-BORE GUNS—*continued.*														
		Cast-iron.														
		32-Pounder.											24-Pounder.			
Weight	cwt.	63°[c]	58[b]	56[d]	56[e] A	48 or 50[f]	45[e] B	42[e] C	40[f]	39[f]	32[f]	25[b]	56[d]	48[d]	20[f] or 22	..
Length	ft. in.	9 7	9 6	9 6	9 0	8 0	8 6	8 0	7 6	7 6	6 6	6 0	9 6	9 0	6 0	..
Calibre	in.	6·41	6·375	6·41	6·375	6·41	6·35	6·35	6·35	6·35	6·3	6·3	5·823	5·823	5·823	..
Charge: Battering	lb. oz.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Charge: Service	,,	10[h]	10[h]	10[h]	8	8	7	6	6	6	5	4 0	8[i]	8[i]	2 8	..
Charge: Saluting or Exercising	,,	6	6	6	4	4	4	4	4	4	3	2 8	5	5	2 8	..
Shot: Solid	lb. oz.	..	..	..	..	..	31 6	..	..	..	..		..	23 8	..	..
Shot: Steel	,,	..	..	..	..	..	..	..	..	..	..		..	..	..	..
Shot: Grape	,,	..	..	..	..	..	37 8¼	..	..	..	..	..	..	26 3	..	..
Shot: Case	,,	..	..	..	..	O.P / N.P.	34 11 / 36 12	..	..	..	..	..	..	24 2	..	..
Shell: Common, empty	,,	..	..	..	..	..	22 5	..	..	..	..	..	..	16 12	..	..
Shell: Naval	,,	..	..	..	..	..	22 6	..	..	..	..	..	..	..	..	..
Shell: Shrapnel	,,	..	..	..	..	..	28 3½	..	..	..	..	..	..	21 5	..	..
Carcasses	,,	..	..	..	..	..	28 8	..	..	..	..	..	..	18 0	..	..
Bursting charge: Common, Naval	,,	..	..	..	..	..	1 5	..	..	..	..	..	..	1	..	..
Bursting charge: Shrapnel	drs.	..	..	..	..	..	50	..	..	..	..	..	..	40	..	..
						N[a]	C									
Fuzes: Percussion Pettman's L.S.		..	..	..	..	..	18	..	..	..	..	..	18	18	18	18
Fuzes: Percussion Pettman's S.S.[k]		..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Fuzes: Time, Boxer, Wood: Common		..	..	..	..	..	1	..	..	..	..	..	1	1	1	..
Fuzes: Time, Boxer, Wood: Diaph. Shrapnel		..	..	..	..	..	1	..	..	..	..	..	1	1	1	..

[a] N, Naval. C, Common. [b] Dundas's. [c] Millar's. [d] Blomefield's. [e] Monk's A, B, C. [f] Bored-up.
[g] If the shell plugs have a cross on them, not otherwise. [h] Charges for hot shot for 32-Prs. 63 to 56 cwt., 7 lbs. 8 ozs.
[i] Charges for hot shot for 24-Prs. of 50 and 48 cwt., 6 lbs.
[k] Pettman's S.S. fuzes, and the 20" and 7¼" metal time fuze, will be superseded by Pettman's general service and 20" and 9" M. L. wood time fuzes, as soon as a sufficient store has been made.
N.B.—*Those natures marked with ° are only retained in the service until the few pieces still existing are used up or replaced.*

Figure 2 – List of 32-pounder Service Guns

From 'The Artillerist Manual', FA Griffiths (1868), page 60.

Having established the pattern of the pivot gun barrel, the pertinent details can be taken from a contemporary illustration shown in 'Diagrams of Guns 1853' – plate VII, by Captain Boxer (see Figure 3 next page). This illustration, with its associated table of parameters, provides the dimensions of guns made to this pattern, of which such a design (option 1) conforms with the description of the pivot gun fitted in HMCSS *Victoria*: specifically, a 9' 6" 32-pounder gun of 56-cwt.

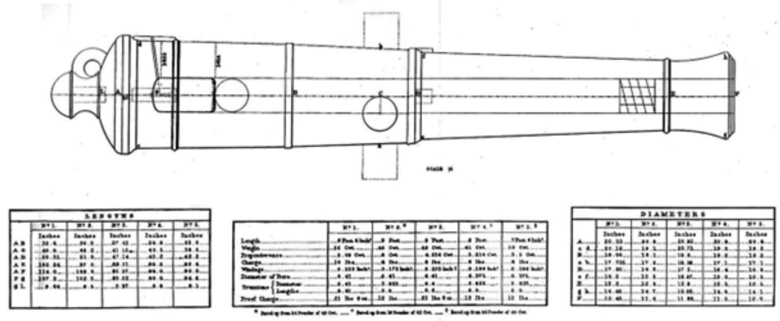


Figure 3 ***– Dundas Pattern*** *Gun Drawing*
Extract from 'Diagram of Guns', Captain Boxer, 1850, Plate VII

There were two items of gun equipment though that required further investigation: the fitting (or not) of sights and the gunlock. The previous article about *Victoria's* armament identified that a gun sight was fitted. This is corroborated by the stores muster, conducted in mid-1858, which listed several tangent sights.

The survey of *Victoria's* gunnery stores also identified that sufficient gunlocks were carried to outfit the broadside guns only. More importantly she was carrying a mix of cross headed percussion primers and the newer friction primers. The latter were probably for use with the pivot gun.

The imagery of HMCSS *Victoria* shows conclusively that gunlocks were fitted to the broadside guns, but no imagery can be found of her pivot gun. Furthermore, the imagery of similar pivot guns shows that no gunlocks were fitted. Additionally, close inspection of physical examples of these guns used in the shore batteries around Melbourne, show that no mounting holes are provided for the fitting of a gun lock in this pattern of gun.

Figure 4 ***– Dundas Pattern*** *Gun*
Render by, and used with permission of, Chris. Ramsay ©2022

Gun Slide and Carriage

The design of the slide and the carriage provided for the pivot gun was not specified, nor can it be positively identified from the correspondence or the imagery. The probable type of gun slide (lower part) and carriage (upper part) fitted has therefore been determined from analysis of the available information and a practical interpretation of the imagery and contemporary practice.

Sufficient information is provided by Garbett (1897) – 1971 reprint, in his descriptions of pivot guns, pages 66-68, that some confidence can be taken in determining the probable carriage and slide design of the pivot gun fitted in *Victoria*.

He describes the pivot gun as:

> *… For pivot-guns, a wooden carriage mounted on a wooden slide, which traversed on gun-metal racers secured to the deck, …*
>
> *The carriage itself was almost similar to the truck-carriage, but instead of trucks had flat wooden blocks, faced with iron, both in front and rear, which rested on the slide; there were two small gun-metal trucks or rollers attached to the front of the brackets, and two smaller trucks still in rear, which worked on eccentrics, so that the carriage could be thrown on and off them as requisite for running in or out by means of levers working in sockets attached to the eccentrics; ….*
>
> *The slide consisted of two side pieces connected by a head-block and two under chocks [blocks of wood shod with metal friction plates, to take the bearing of the racers]; iron plates were secured on the top of the side pieces on which the rollers (or trucks) and the blocks of the carriage worked when the gun was running in or out. The slide could be pivoted both in front and rear, and, …*
>
> *The carriages were fitted with an iron compressor on each bracket of the carriage, when screwed up, checked the recoil of the carriage on the slide. The guns were fitted to elevate by means of an elevating screw under the breech, …*

Lockyer in an enclosure to his letter to the then Lt.-Governor of Victoria (La Trobe) dated 15th April 1853, makes a recommendation:

> *That application be made to the Admiralty for permission to have the gun slides of the best and newest date be fitted at the Woolwich yard.*

Establishing the configuration of the 'latest design' proved difficult as no definitive statement could be found in any contemporary publication. The most probable candidate was established by analysis of the dates for the various carriages shown in the various NMM sketches, and sketches published in contemporary publications (Magazines and Chronicles etc.).

Rif Winfield in his 'British Warships in the Age of Sail 1817-1863, ….', page 164, writes that:

> *…. 9 May 1845, as 'M^{r}. White is about to propose a plan for firing guns from the bow in the line of the keel', on 9 July this plan was approved, with a 32pdr (56cwt) gun to be mounted on a pivot in a line with the keel.*

This early design may have been to Mr. White's design but no information for such a carriage has been found. The Ferguson Improved Carriage, as depicted at Figure 5, appears to have been in common use with the Royal Navy (RN) before 1855.

The first mention of this carriage is in 'The Mechanics' Magazine' Volume 53 of 1850, in which an article supporting the patent registration by Messrs. C.A. and F. Ferguson of an improved gun carriage is found on pages 21/22.

This is the best fit for a pivot gun carriage of this era as the majority of contemporary imagery of pivot guns appear to use a variation of this carriage. This is particularly evident in the various positions shown for the centre transom in particular, in the various imagery and the NMM Collections plans.

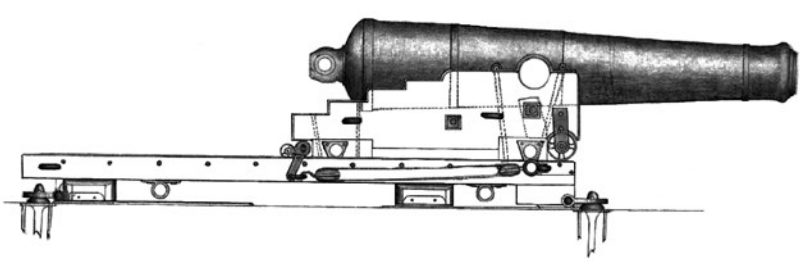


Figure 5 – Ferguson's Improved Gun Slide Carriage

Mechanic Magazine Volume 53, 1850.

Slide

The slide was used to traverse the gun using tackles fitted to eyebolts in the rails, fore and aft, and eyebolts fitted in the deck, possibly assisted with handspikes or levers. Captain W. Kemmis, 'A Treatise of Military Carriages' by (1874), suggests these eyebolts were located 15" from the after end of each rail; however, the Ferguson's patent drawing (Figure 5), has been used as the primary reference in establishing the position of the eyebolts and other gun furniture.

The hinged gunmetal 'flaps' fitted to the forward and rear transoms (sometimes also called chocks or blocks), were used to engage with the metal pivot pinions. The survey of Gunnery Stores conducted 17th December 1858 confirms the fitting of flaps, which lends some confidence in the choice of this version of carriage.

Slide Design

In developing a drawing for the slide, further guidance was taken from Kemmis, page 177. He informs that slides were developed in three sizes, heavy, medium and light. Based on the table he provided, the 32-pounder 56-cwt gun was fitted to a medium slide, which had rails 11' long.

The probable configuration of the slide is depicted at Figure 6 below. The forward transom being part of the fighting block or 'head', would have just cleared the deck with the weight taken on the centre and after transoms fitted with gunmetal bearers to slide on the racers (sweeps).

Additionally, on page 214, Kemmis informs that "lifting joint levers are used for raising the pivot flaps of revolving slides, and are of two descriptions, viz., common, for use with wooden slides, and...", confirming the fitting of these flaps as shown in the Ferguson drawing.

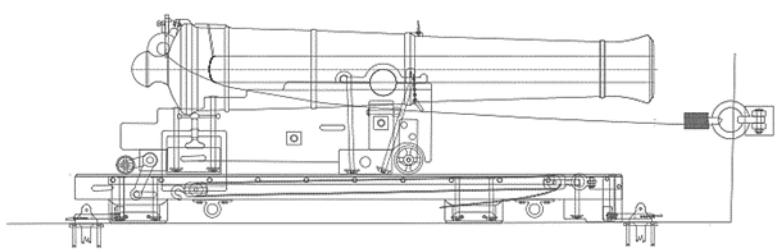


Figure 6 – Drawing of *Victoria's* Probable Pivot Gun Configuration
Author's Drawing (©2023)

Kemmis, page 177, informs that the slide comprises two long rails connected forward by the head or fighting block, a middle transom, and an after transom, the rails being 'jogged' into the transoms. Hinged gunmetal pinion brackets (flaps) were fitted to the front and rear of the forward and middle transoms respectively, metal plates fitted to the bottom of the transoms (sometimes also called chocks or slats). Gunmetal plates were screwed to the rail and the riband upper surfaces to act as friction plates.

Kemmis also informs that a medium slide consists of two sides of African oak connected by a head block of the same, and two under blocks of sabicu, while down the centre, between the sides, are placed two planks of sabicu.

The sides are parallel and 21" apart. A riband is attached to the outer upper side of the rails, which was used to adapt the slide for the frame compressors. <u>All</u> medium slides were fitted with metal flaps for housing or pivoting, …, axletree bands for transporting, and shackles used for the breeching rope and for traversing.

Carriage

Earlier discussion determined that the most likely design was that of the Improved Ferguson carriage. The sketch of such a carriage from the Mechanics Magazine was scaled to conform with an 11' slide rail length and used as the basis for drawing the carriage used in *Victoria's* gun.

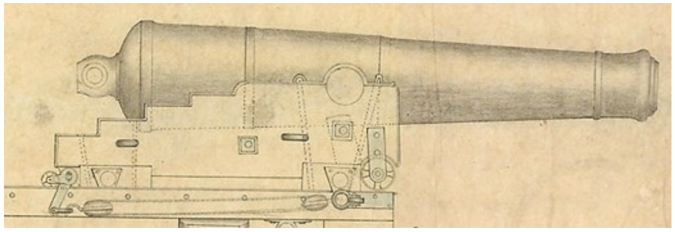


Figure 7 – Ferguson Improved Slide Carriage
NMM Collections - ZAZ7012

Kemmis informs that the sliding carriage was based on a common naval (or standing) carriage. On page 96, he also advises that the transoms are morticed into the sides and secured with tie bolts. The head block is dovetailed into the sides over the front transom. Planks are fitted between the sides for men to stand on.

Some adjustment was required to ensure the height of the carriage brackets allowed the gun to elevate and depress within the required limits, and to conform with the height of the gun as depicted in the lithograph (appears to project about a half barrel diameter above the roughtree rail). The latter, however, can only be taken to be an indicative height and some artistic licence must be allowed.

Kemmis also confirms the fitting of the eccentric mechanisms in a gun of the size fitted in *Victoria*.

Gun Furniture

This discussion is not intended to be a definitive statement of the carriage furniture nor is it fully inclusive of all the fittings. The position of the various bolts, eyebolts etc., can readily be determined from the drawings of the source sketches.

Compressors

Frederick L. Robertson, in his book 'The Evolution of Naval Armament', a collection of essays, at Chapter VI (pages 158/159), discusses the truck carriage, but also provides some insights into the way gun recoil mechanisms evolved; specifically:

> *…. And then at length, with the continuous growth of gun energy, the forces of recoil became so great that the ordinary carriage constrained by rope breechings could no longer cope with them. The friction of wood rear-chocks against the deck was replaced by the friction of vertical iron plates, attached to the carriage, against similar plates attached to a slide interposed between carriage and deck, and automatically compressed, the invention, it is said, of Admiral Sir Thomas Hardy ….*

A later modification to the pivot gun carriages was the fitting of compressors, one fitted each side on the rear transom of the carriage. These engaged with the ribands fitted to the outer top surface of each rail on the slide (see Figure 6). This earlier form of compressor, called a 'frame' compressor, was in use by 1855 as Douglas in his Treatise of that year, mentions their use, and they are illustrated by the Fergusons in their patent of 1847. According to Captain W. Kemmis, RA, on page 177 of his 'Treatise on Military Carriages and Other Manufactures of The Royal Carriage Department', 1874, the later version, the side plate compressor, was still not fitted to the 32 pounder 56cwt gun carriages. Captain H. Garbett in his 'Naval Gunnery – A Description and History of the Fighting Equipment of a Man-of-War', page 68 states that:

The carriages were fitted with an iron compressor on each bracket of the carriage, which, when screwed up, checked the recoil of the carriage on the slide.

Edward Simpson in 'A Treatise on Ordnance and Naval Gunnery' (1862), page 119, writes:

Carriages have been proposed for adoption in which the recoil is restrained by friction. These usually consist of a slide and top carriage, the friction of the latter on the slide usually being increased by a clamp and compressor to be compressed before firing.

The weight of evidence suggests that the compressors were primarily used to control the gun's recoil, but perhaps also to lock the upper carriage to the slide while it was being loaded, and/or to secure it for sea. Additionally, the USN practice was to always use a breeching rope as a preventer rather than rely on the compressors alone. It is assumed the RN were of the same opinion as all imagery shows the fitting of breeching ropes.

According to the 'Ordinance Instructions for the US Navy' (1864), pages 66 - 76, discussing the drills used with USN pivot guns, a number on each side of the gun was responsible for setting and releasing the compressors as required. The compressor being adjusted to apply sufficient pressure to assist in controlling the recoil but not so much as to cause the carriage to lock or grab prematurely. In the USN, the order to execute this was given as "Down all levers and set compressors".

Iron plates were screwed to the top of each of the slide's rails and to the underside of the carriage transoms, also known as chocks, where they were in contact with the rails on which the carriage 'ran' in and out. Friction caused by these plates, in conjunction with the weight of the gun and the pressure applied by the compressors, was usually sufficient to check the gun when in recoil to prevent the breeching rope being 'shocked'. Once the gun had been manoeuvred into its fighting position, the ends of the breech rope were secured to eyebolts in the bulwark roughtree timbers at the appropriate height and angle for the gun.

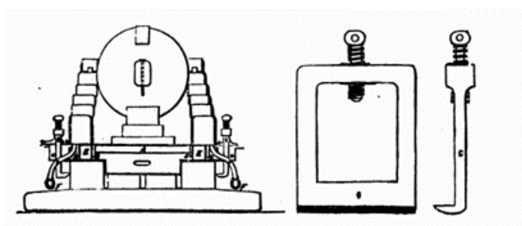


Figure **8 – Frame Compressor as fitted to Ferguson Improved Carriage**
Crop of an Illustration from 'The Mechanics Register', Jul-Dec 1850, page 21

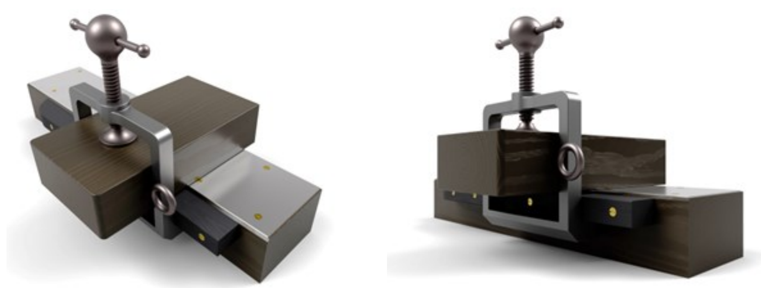


Figure **9 – Frame Compressor Detail**
3D render created by, and used with permission of, Chris Ramsey (©2022)

When securing the gun, the compressors were wiped clean, re-lacquered and tightened. In addition, when securing the gun, wedges or chocks may also have been used in front of, and behind, the carriage rollers. Lashings would also have been applied to the tackles, and possibly the gun barrel and gun equipment.

Elevating Screw

No definitive information has been found to positively identify the elevating mechanism used in the pivot gun. While it is possible, it is very unlikely, that a quoin was still being used rather than some form of mechanical elevating device.

As mentioned earlier, Garbett (1897), page 68, informs that:

> *The guns were first fitted to elevate by means of an elevating screw under the breech, …*

Unfortunately, Garbett does not give any dates for their introduction. Kemmis, on page 175 of his Treatise, in discussing naval gun carriages, informs that:

> *The elevating screw used with them is either the common cross-handled or the ratchet-headed.*

Based on Garbett's text, it is more likely that *Victoria's* pivot gun was fitted with a screw elevating mechanism made from gunmetal. A US Navy Department Library online publication, 'Bronze Guns (cannons) Glossary', Part IV of the Bronze Guns of Leutze Park, defines the screw elevator as:

> *A vertical threaded shaft, its lower end rotating in a socket in a gun carriage and its upper end supporting the breech of the gun. A small cross-handle was attached to the upper end of the screw; as the gunner observed the target, he turned the screw handle to raise or lower the gun to the proper elevation.*

A gunmetal or bronze screw shaft will have been essential as an iron screw into a cast-iron receiver would have the tendency to rust fast. Bronze or gunmetal in cast-iron has a good relative coefficient of friction and is less likely to get stuck, although there might be a slight risk of dissimilar metal reaction.

The chronology for the development of these devices indicates that *Victoria's* pivot gun will have utilised an early variant of the elevating screw mechanism, which was probably fitted with a cruciform turning handle. This assumption is supported by contemporary imagery, in particular a photograph of a pivot gun in the Confederate States Ship (CSS) *Teaser*.

The following image, which is a crop of *Teaser's* stern gun mount, shows the type and the detail of the elevating screw arrangement that probably would have been fitted to *Victoria's* pivot gun.

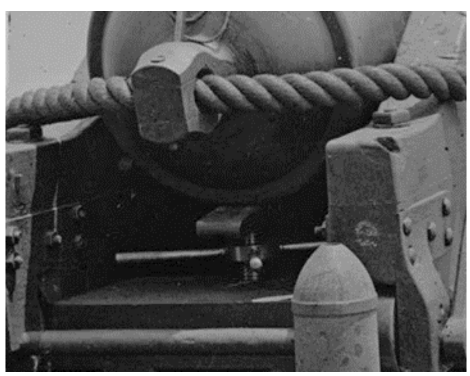


Figure **10 – Elevating Screw with a Cross-Headed Handle**
Wikipedia public domain, original photograph Library of Congress – Image CWPB 01053

Trunnion Caps

The trunnion cap is assumed to be the standard configuration used with British guns of this size in this era. The trunnion cap comprised a hinged plate shaped to conform to the radius of the trunnion. The plate was secured to the upper face of each bracket by the hinged eyebolt to the rear, and on the fore side of the trunnion with a pin and forelock through the carriage bracket bolt.

Both of the bolts passed entirely through the forward transom and the brackets, using a recessed square nut and washer to secure them within the underside of the brackets. This is well illustrated in the NMM image shown earlier at Figure 7.

Carriage Rollers

Kemmis (1874), page176, also informs that:

> *Sliding carriages, except the 20-pdr, have the same width of guide block as land service wooden sliding carriages, so that they can be used on the dwarf or casemate wooden platform. They differ from the latter carriages not only in the height of the brackets, but in having rear as well as front rollers, holes for a breeching rope, and in being fitted with the side plate compressor (except the 32-pdr. of 56-cwt., which has not yet been so fitted). In the 40-pdr. and lower natures of sliding carriages there are rollers run upon cranked axles, and are brought into play by … For a preventor rope a metal sheaf is let into the rear block.*

The front rollers of the carriage were attached using iron knees (straps) either side of each bracket and bolted through the brackets as shown at Figure 11. The rollers were usually made of gunmetal and were perforated to reduce their weight.

Figure 11 – Front Carriage Roller fitted to the Warrnambool Casemate Gun
Author's Photograph (©2016)

The after rollers were fitted on a shaft with eccentric cams and levers. The latter were attached as required to a squared lug on each end to receive the levers, one either side. This solid shaft, which was secured through gudgeons on each side of the rear face of the rear transom, cross connected the rollers.

Note that the diameter of the rear carriage rollers was smaller than that of the forward rollers (see Figure 14). It is assumed this was to allow the transom friction plates to engage effectively with the top of the slide's rails when lowered.

Eccentric Mechanism

The eccentric mechanism was operated using side levers (Figure 12) which were controlled with tackles. The eccentricity was imparted by offsetting the axle through larger gunmetal cams forged onto the axle within kneed gun metal gudgeons at the rear of the after transom.

The eccentric mechanism would then be engaged by heaving on the dedicated tackles, one fitted to each lever. While it is possible the levers may have been operated from one side only, it is understood that both tackles would be used in unison to raise the carriage.

In later years the lever was changed to a longer straight single arm in the raised position; however, in its early form appears to have been a shorter arm in a downward position. The lever was fitted to the rear axle on forged square lugs at both ends of the axle. The axle passed through the kneed gudgeons and supported with additional bolts through the after face of the rear transom between the gudgeons.

According to an USN Ordnance Instruction (1864), the eccentric levers were unshipped when the gun was not in action and reshipped when clearing for action. By hauling on the tackle fitted to the levers, the rear rollers were caused to raise or lower.

In the lowered position the bottom of the carriage transoms would rest on the top of the slide's rails. The eccentric mechanism raised the upper carriage onto its rear wheels sufficient to lift both transoms clear of the rails allowing the gun to be run in or out on the carriage rollers using the gun tackles. The wheels also allowed the gun to be run in (brought out of battery) if not fired, or if the recoil did not push it back sufficiently.

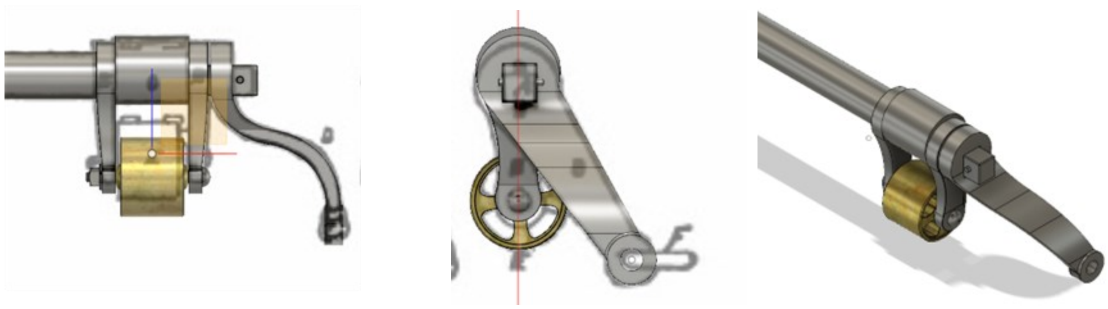


Figure **12 – Eccentric Mechanism Detail**
3D renders created by, and used with permission of, Chris Ramsey (©2019)

The recoil would throw the gun off the eccentrics and utilise the weight of the gun and upper carriage sliding on the metal bearer (friction) plates, which supplemented with the compressors, controlled the gun's rearward movement in recoil, with the breech rope acting as a preventer should the compressors fail.

Slide Traversing Plates

Medium gun slides were fitted with iron plates rather than rollers for traversing the gun on the racers; rollers were only used with heavy guns. Metal plates were fitted to the bottom of the transoms with their ends folded up on the middle and rear transoms. This arrangement is discussed by W. Kemmis (1874), page 177:

> *The under blocks are shod with metal friction plates to take the bearing upon the racers.*

Presumably, the folded, or wrapped ends, were intended to minimise splintering and damage to the bottom outer edge of the transom and reduce the chances of this edge 'digging in' into or catching on the racer (see Figure 13). The full surface area of these plates did not run on the racers; only those parts in contact with the racer arcs, which will have helped in minimising resistance.

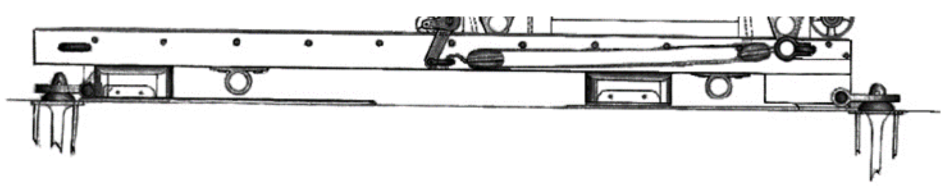


Figure 13 – Friction Plates Fitted to the Slide Transoms
Crop of Sketch – NMM Collections – ZAZ7012

Tackle Fittings

Analysis of the various 32-pounder 56-cwt gun pivot imagery and NMM sketches establishes that the Carriage and Slide was fitted with eyebolts for traversing, running the gun in and out, and to which the running block of the train tackles were hooked to fight and manoeuvre the gun.

Additionally, the eccentric's tackles, discussed earlier, required hinged bow shackles fitted as shown at Figure 12. The running block of the tackle was hooked to this shackle and the standing block shackled to the forged eye in the bottom of the eccentric mechanism lever.

It is likely that the hinged ringbolts at the forward ends of the slide rails were also used to assist in the traversing and training/pointing of the gun as no other eyebolts are shown in any of the imagery for this purpose. As the gun would not be run into or out of battery while traversing, there would not be any need to engage the eccentric tackles while the gun was trained. The eccentric tackle fixed block may have been unhooked and set-aside while the gun was traversed.

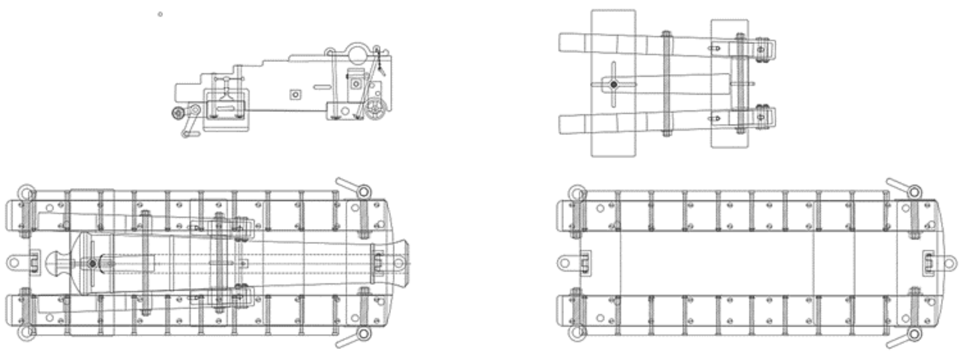


Figure 14 – Pivot Gun Furniture
Author's Drawing (©2023).

The gun tackles were rigged between an eye in the outer sides of each bracket and large bow shackles/hinged eyes fitted forward on the outer sides of the slide rails. The standing end of the tackle was fitted to the eyebolt on the carriage and the running end to the slide. Only one gun tackle per side was required as it was practicable to run the gun out/into battery, without the tackle being shifted. *(continued next page)*

Four eyebolts are located on the slide, one near each end of each rail, for use with the traversing/training tackles. The forward eyebolts are fitted to the upper side of the head block and comprise one of two bolts each side, that secure the block to the rails. The rear eyebolts are fitted to the outer sides at the ends of the rails.

The traversing tackles are rigged between these eyebolts and purpose fitted eyebolts or padeyes in the deck, with the running block hooked on at the slide. It was not possible, in pivoting, to exert direct action for more than about an eighth of a circle by one position of a tackle, and it was absolutely dangerous at sea to leave the Slide unconfined for an instant. Accordingly, enough deck mounted padeyes or ringbolts needed to be fitted to allow the gun to be traversed through 180 degrees either side.

The train tackle was rigged between an eye plate fitted centrally in the after-carriage transom (Figure 15) and an eyebolt fitted through the upper surface of the after-slide transom. The other end of this transom eyebolt was secured with a nut and washer.

Figure 15 – Train Tackle Eye Plate fitted to the Warrnambool Casemate Gun
Author's Photograph (©2016)

Transporting Fittings

Kemmis (1874), page 214, informs that "a wooden Sliding Carriage is usually transported upon its Slide, though it may be transported by itself, as it has a hole in the front block to take the axletree, and a handspike iron on the rear block."

Kemmis, page 177, explains that there was a hole bored longitudinally through the middle of the front transom of the carriage to accept an iron axletree. These holes were sometimes fitted with a triangular shaped gunmetal cover plate to protect the rim edges of the bored hole.

Figure **16 – Axletree Bands fitted to the Warrnambool Casemate Gun**
Author's Photograph (©2016)

The US Naval Ordnance Instructions of 1866 refer to "the transporting-trucks shipped and secured to their axles"; Kemmis informs that these trucks were made of wood but does not provide a size.

The axle was inserted into a pair of bands, similar in shape to a 'bowed' U-bracket, fitted to the underside of each rail, one set forward, the other aft. These are shown consistently in all imagery and sketches of the Ferguson Improved Carriage.

A special tool was then used to lift the other end of the Slide and guide it while being manoeuvred, or 'transported' to its new location. The metal flap on the front of the Slide is removed and replaced by a transporting bracket (see Figure 17) which provides a bearing for the roller (wooden) handspike, the nib of which fits into the recess in its arm. The stores survey of 1858 included two roller hand spikes: one of 6' and the other 7' in length.

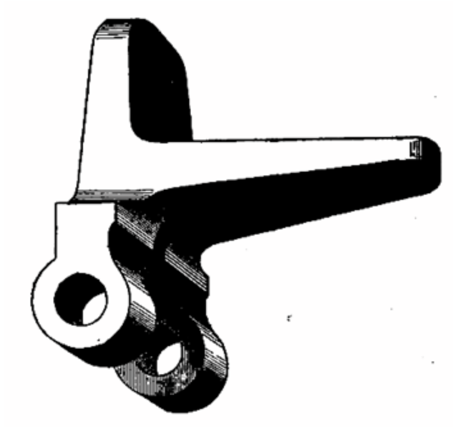


Figure 17 – Transporting Bracket
'A Treatise on Military Carriages', W. Kemmis, 1874, page 214

Breeching and Preventer Rope Fittings

According to the USN Ordinance Instructions (1864), while for a different type of gun are assumed to be similar to the pivot gun drills used by the RN, the breeching rope is always shackled to the Ship's side (or deck) and not to the slide. Accordingly, the breeching rope would not have been fitted until the gun was run out. This arrangement is supported by contemporary imagery, in particular a lithograph of HMS *Snake's* pivot gun dated 1855, which shows a very long breeching rope laid slackly in front of the carriage.

Kemmis, page 176, states that "for a preventor rope a metal sheaf is let into the rear block"; this is assumed to be the rear block of the carriage.

On page 177, he also writes that in slides for the lighter natures of guns, there is a hole in the end of the left side, and at the end of the right a groove and a bollard to take the breeching rope. Imagery of the gun slides show these as a fixed wooden bollard, some fitted inboard, others outboard.

In *Victoria*, it has been assumed that as she lay in the medium nature of guns, that the slide was fitted with the bollards. These were used to secure the running end of the preventer rope. An example of such a bollard is shown at Figure 18, which is a crop of a lithograph that depicts HMS *Snake*, an Arrow class vessel in action in 1855.

While the bollard shown at Figure 18 infers a bolt is fitted through its centre as an axel; all physical examples of casemate guns show this as a fixed timber, carved from a larger block and fixed to the Slide side timbers as shown at Figure 19.

Figure 18 – Fixed Sheaf in HMS *Snake* c1855
Crop of a Lithograph

Figure 19 – Fixed Sheaf on the Warrnambool Casemate Gun
Author's Photograph (©2016)

Breeching Rope

According to Simmons (1812), pages 177 and 178:

> *The Breeching is a rope to secure and prevent the gun from recoiling too much. ….. A Preventer-breeching is similar to the breeching and is used for additional security.*
>
> *Guns are housed or secured by taking out the coins and lowering the breech, so that the- muzzle may take the upper part of the port. When thus placed, the two sides of the breeching are frapped under the gun at the muzzle near the breast part of the carriage. The muzzle of the gun is confined by several turns of a rope, or gasket, made fast to it, and the eye-bolts that are fixed in the ship's side, over the midship of the port.*

Rates of the ships.	Number of guns.	Pounders.	Length.	Number on each deck.	What decks they are on.	Breechings.			Tackles			Muzzle lashings			Port ropes.				Port tackle falls.			
						Size on each deck.	Length in feet.	No. on each deck.	Size on each deck.	Length in fathoms.	No. on each deck.	Size.	Length in fathoms.	Number.	Size on each deck.	Length in feet.	No. on each deck.	Total for each ship.	Size on each deck.	Length in feet.	No. on each deck.	Total for each ship.
						In			In			In			In				In			
1st.	100	32	10	28	Lower ….	6	30	28	2½	10	56	2½	4	28	3	21	32	76	2	24	32	72
		24	10	28	Middle …	6	30	28	2½	10	56	—	—	—	2½	16	26	—	2	21	16	—
		11	9½	28	Upper .. .	5	28	28	2	8	56	—	—	—	2	14	14	—	2	18	14	—
		6	9	16	Quart. & Forecast.	4	27	16	2	7	32	—	—	—	2	10	4	—	—	—	—	—
2nd	90	32	9½	26	Lower ….	6	28	26	2½	10	52	2½	4	26	2½	21	32	74	2	24	32	70
		18	9½	26	Middle …	5	28	26	2½	9	52	—	—	—	2	16	24	—	2	21	24	—
		9	9½	26	Upper ….	4	28	26	2	8	52	—	—	—	2	14	14	—	—	—	—	—
		6	9	12	Quart. & forecast.	4	27	12	2	7	24	—	—	—	2	10	4	—	—	—	—	—

Table 1. Breeching Rope Sizes
Crop from 'Sea Gunners Vade-mecum', R Simmons, 1812, page 179, Table AA2

In pivot guns, the breeching rope, and presumably the preventer rope if used, was only rove after the gun had been shifted to the required fighting position. The breeching rope, after being rove through the cascable loop, was secured to ringbolts adjacent to the gunports. The preventer rope was rigged on the slide.

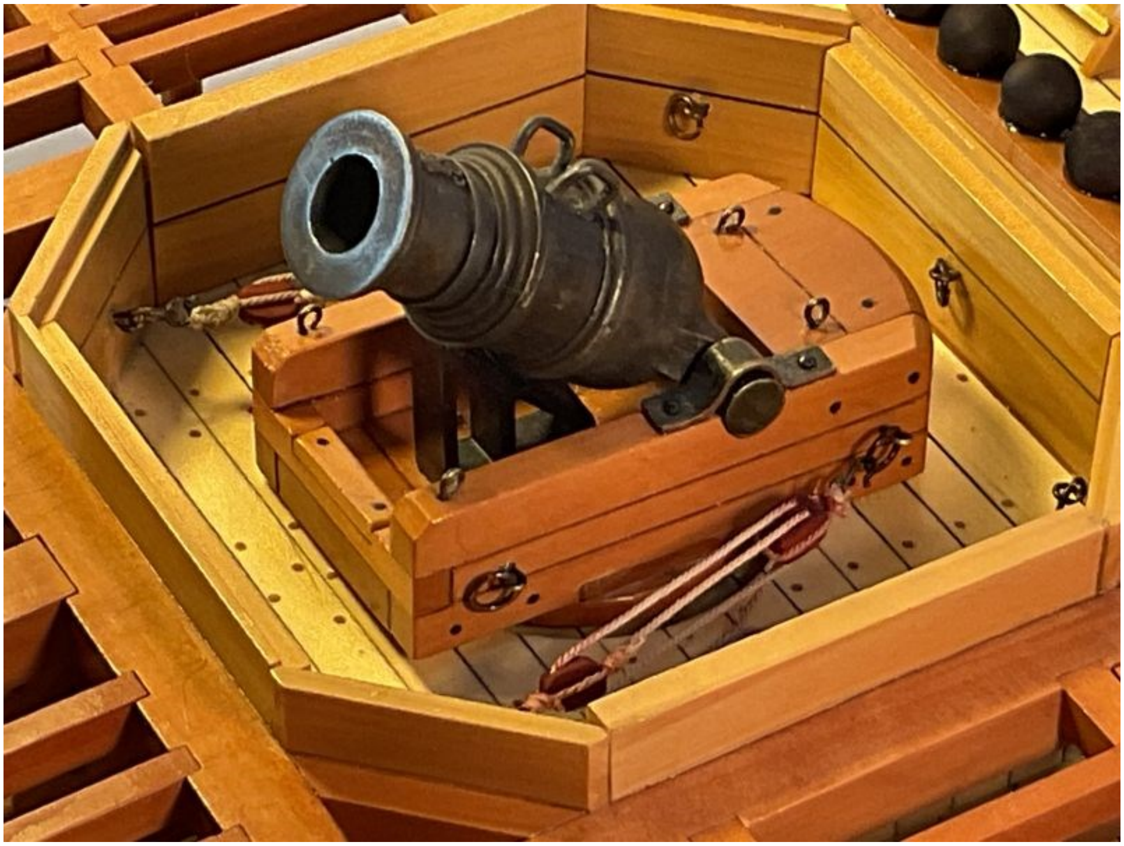
If used, the standing end of the preventer rope is held in the hole through the rear of left rail, probably with some form of stopper knot in the standing end. The rope was then led forward through the ringbolt on the left-hand side ringbolt at the front of the slide, led back and rove through the sheaf let into the rear block of the carriage. It was then led forward to the right-hand side ringbolt, then aft to the bollard.

The breeching rope length and circumference was governed by the size of the gun. Simmons (1812), page 179, provides an indicative size of the breech rope, tackles and lashing for a 9ft 6 in gun. While not of the same era, and for guns fitted on a common carriage, these sizes will probably have remained extant. It is likely the length of the breeching rope in the pivot guns may have been longer for ease of working it and to allow sufficient length for securing the tail end to the bollard.

Lavery (1987), page 141, informs that the breeching ropes for 24-pounder or greater guns, were generally 6 inches circumference, and three times the length of the gun. He states later that by the 1780s, the circumference for these ropes had increased to 7 inches for 32-pounder and great guns.

HMS Granado Cross Section

By David Blake



Makerspace

By Mike Shanks

Next to lasers, CNC milling machines are the most popular tool for the mass production of wooden model parts by kit makers. *Computer Numeric Control* (CNC) is a rather broad term used to describe manufacturing processes which are controlled by computers. Believe it or not, laser engravers, 3D printers, and even inkjet printers are all forms of CNC devices. For our context of model building, we will refer to CNC as the class of tools which perform mechanical milling operations on wood to create precision shapes and sizes. This month, we will do an overview of CNC milling machines for wooden ship modeling, the different types, their components, how they are operated, and most importantly what they can do for model building that other forms of fabrication may not be able to achieve.

The first CNC milling machine was invented by researchers at MIT in 1952. Numeric control of servomechanical machine tools were typically programmed using punched paper tape or cards. The first commercial uses for CNC machining were in aerospace and automotive industries. By the 1970's, the advent of mini computers saw the rise of CNC used across nearly all industries where products are created or assembled in mass quantities. The 1980's saw the consumer introduction of personal computers and *Computer Aided Design* (CAD) became common. Today, consumers now have the ability to create their own original designs in a computer – CAD – and then use that design to develop instructions that can be read by a CNC milling machine. The entire process when viewed end-to-end is known as *Computer Aided Manufacturing* (CAM). You will sometimes see the term CAD/CAM used together. The easiest way to think about these terms is as follows:

- **CAD** – Software used on a computer to draw and/or create the design for a model part
- **CNC** – The rudimentary universal numeric code used by machine tools. Also referred to as a toolpath or G-Code.
- **CAM** – The overall process of using computers to enhance manufacturing

So, what is a CNC Milling Machine? It is a milling machine that is controlled by a computer instead of handwheels and levers. Many scratch builders have Sherline milling machines, lathes or similar from other brands. These tools allow the modeler to cut, turn, and carve with extreme precision to create parts that would otherwise be very difficult to accomplish with simple knives and files. Like any tool, milling machines take a lot of time and practice to master. Because they are required to be ridged and precise, good mills can also be quite expensive. Operating a mill can become a hobby on its own easily consuming hundreds of hours just making parts and learning various machining techniques.

Sherline Milling Machine

The primary drawbacks of milling machines (and lathes) are the length of time required to make a part and the fact that you can only make one part at a time generally speaking. It is also not especially easy to duplicate parts. While you may be using CAD drawings for your parts designs, you are still relying on analog-based skills to operate the tool to make the physical parts.

With a CNC Milling Machine we replace the hand controls with computer-controlled servos, stepper motors, and gantries. Not only does this vastly increase production speed but it also allows us to utilize the “design once, make many” design principle. A CNC Milling Machine can make multiple small parts simultaneously or run the same job over and over again to make unlimited duplicates of the same part. Exactly the same, every time. Depending on the quality of the machine, CNC controlled tools can be far more accurate than manually controlled tools of the same type. Not only can CNC Mills cut with extreme precision, they can create incredibly detailed 3D artistic carvings for such things as figure heads, statues, fillagree, quarter badges, and figurines. It probably goes without saying, a CNC mill is going to be more expensive than a manual mill as well as a steeper learning curve due to the software/computer elements added to the process.

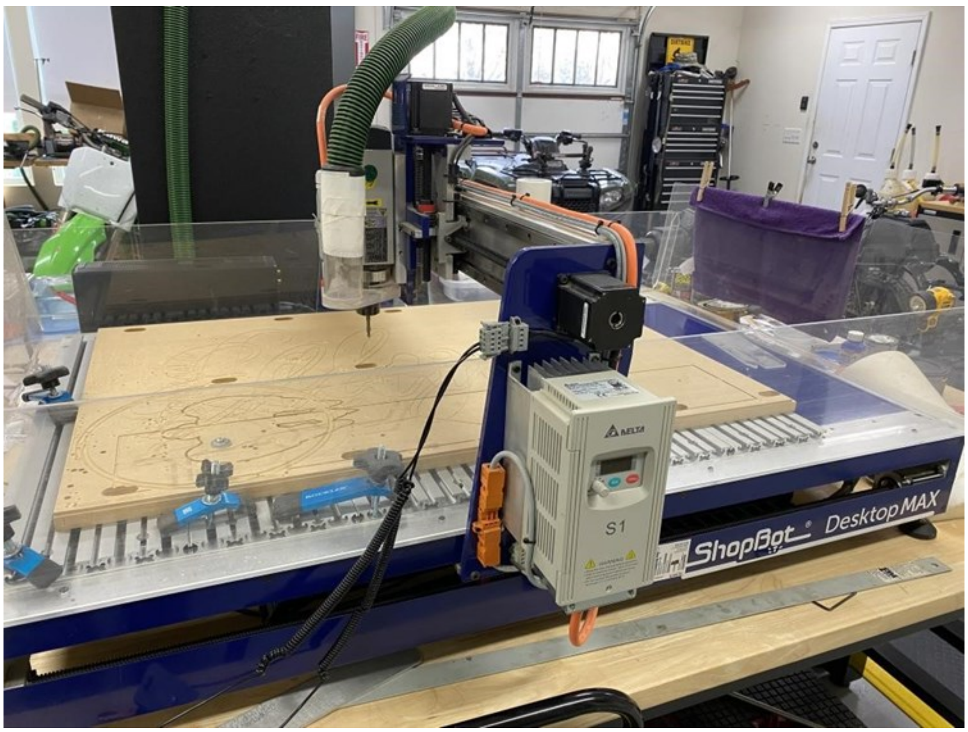
ShopBot 36" x 24" CNC Milling Machine (3-Axis)

The main components of a CNC milling machine include:

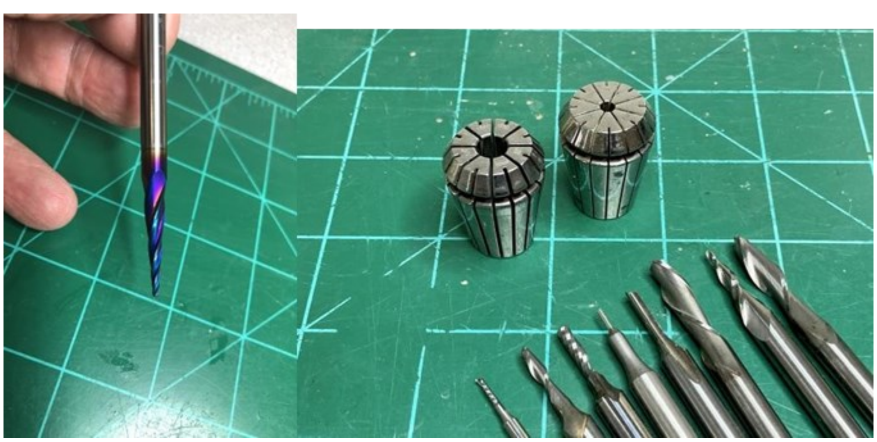
- ***Bed/Spoil Board** – The bed is typically t-track and is where the wood material to be milled gets secured. Most mills will have an MDF or other material "spoil board" mounted on top of the bed. The spoil board allows machine tools to penetrate all the way through material without fear of damaging the aluminum bed. It also provides an additional means for using hold down screws and clamps.*

ShopBot 36" x 24" CNC Milling Machine (3-Axis)

- ***Gantry/Steppers** - The gantry is a moveable structure that positions the cutting tool during operation. The gantry and tools are moved via belts, gears, or screws and controlled with servo stepper motors. The axis of movement varies but is usually x, y, and z (3 dimensions).*
- ***Spindle** – This is the motor that spins the cutting tool. Mills may use a DC motor, a router motor, or a dedicated high-speed spindle mounted vertically. The spindle holds a collet to clamp cutting tools (bits, drills, endmills). Spindle speeds can vary from 1,800 – 30,000rpm.*
- ***Controller** – Most CNC mills have a dedicated controller used to adjust the spindle speed. This is a good feature as different tools have different RPM ratings.*
- ***Shield** – CNC mills should have ballistic protection around the bed. Usually, some form of plexiglass or plywood surround is used to protect the user and area from flying debris or tool breakage at high RPM. Safety glasses should also be worn.*



- ***Tools** – a variety of tools can be used in a milling machine. The most common for ship modeling include small endmills for cutting out parts, tapered ballnose for 3D carvings, and medium endmills for roughing out large areas. A good variety of quality tools is recommended from brands such as Onsrud, 2Linc., Amana, or SpeTool. Carbide is better than tool steel.*



- ***Collector*** *– CNC mills produce a lot of wood chips, dust and debris. Vacuum pickup collection systems are a necessary component of a CNC mill.*

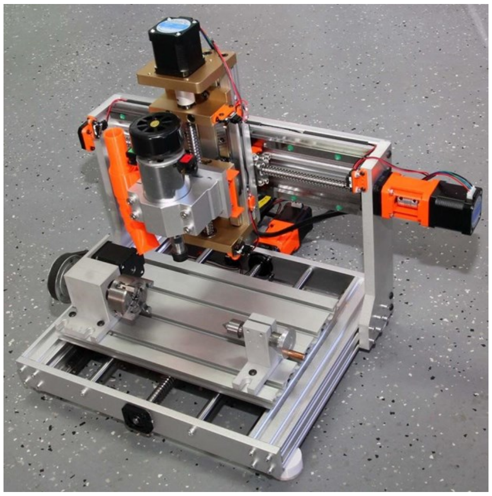
- ***Zero Plate*** *– a device used to detect when the tool touches the work surface and sets the z-axis to zero. This function is critical for accurate machining especially when doing 2-sided operations.*

Most CNC mills are 3-axis operating left/right (x); top/bottom (y); and up/down (z). Using these 3 motions combined with the shape of the cutting tool a CNC mill can cut and carve a nearly unlimited variety of objects. A 3-axis CNC mill using a tapered ballnose can create amazing 3D surface carvings. When using a 2-sided machining operation a 3-axis mill can create a 3D object with both sides in full registration.

3D Surface Carving

2 sided 3D Carving

A 4-axis CNC mill adds the ability to turn the workpiece on an additional axis much like a lathe. This makes machining cylindrical or oddly shaped objects much easier. It also eliminates potential registration errors that could occur with a 2-sided milling operation.



Jodie Grein's custom built 4-axis CNC mill

5-axis milling machines allow the movement of the spindle itself around an additional global axis. This type of machine further increases precision and production speed when making 3D objects. 5-axis mills are very expensive and are usually only seen in large scale scientific and industrial applications.

5-Axis industrial milling machine

Operating a CNC mill can be rather complicated as the user must not only understand the type of cutting tool, they are using but must also create the machine code that runs the mill. This is a very rudimentary computer language. Most common is G-Code. Not too many people write their own machine code from scratch these days. Most CAD packages provide CNC tool simulators and translators that will generate the G-Code directly from the CAD drawings and allow the user to simulate the results on the computer long before running the actual machine. This helps to reduce the learning curve, vastly reduces error, allows for software prototyping, and increases productivity. The step of generating the CNC G-code is commonly referred to as creating a "tool path". Some of the many factors that are considered during this step include:

- **Tool used** – The diameter of the bit, shape of the bit, length of the bit, and materials the bit is designed for are all critical to the success of any milling operation.

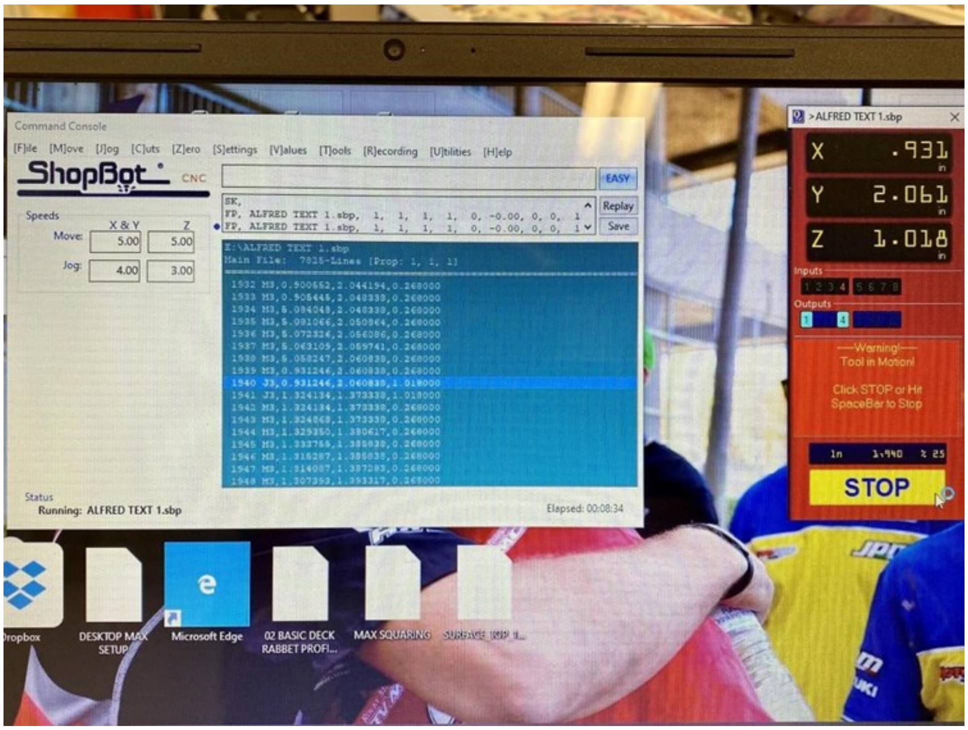
- S**peeds and Feeds** – The rotational speed to spin the tool. Too fast and the wood might burn, too slow and the wood may not cut cleanly. The feed rate is the amount of step over the tool takes on each pass. This includes both the horizontal as well as the vertical (plunge) rates.

  Higher step rates reduce job time but taking too large a bite from the wood at once can cause tool breakage.

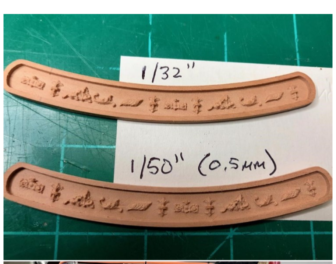
Broken endmill caused by tool path error

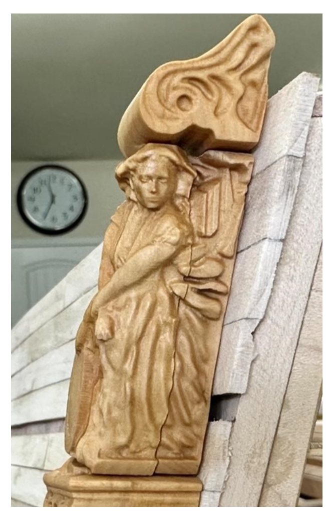
- **Type of wood** – the harder the wood, the slower the feed. Some woods also have a tendency to burn where others won't.
- **Clamping** – Be sure to leave room on the work piece to allow for clamps and/or screws to secure it down to the bed. The tool path must ensure the tool misses any clamps, screws, or dowels that may be present anywhere in the work area.
- **Tabs** – CNC cut parts require tabs or some other means to retain them in the billet as they are being machined. Tabs should be sufficiently sized so that collection vacuums cannot eat small parts but not so large as to make parts removal difficult.
- **Tool Changes/Flips** - A single job may require multiple tool changes. We might need a medium sized endmill to rough out a larger area for carving and to drill some dowel holes. Then, a tapered ball nose to perform a 3D finish carving. Yet another change to a small endmill to actually cut out the part and create the tabs. 2-sided jobs require the material to be flipped over with registration maintained via dowels. Each time a tool/bit is changed the z-axis must be zeroed again. All of this can get quite complicated.

Once our tool path has been created and simulated on the computer, the G-code is generated and transferred over to our CNC mill. Typically, CNC mills are operated by "offline" computers, USB sticks, or SD memory cards. They are usually not on a network as we don't want any interruptions (I.e., patch updates, virus scans, reboots, etc.) to interfere with machining operations. Because CNC work is so precise it is important to use wood that has been planed or sanded flat and measured. The work piece is clamped to the bed, appropriate tool installed, z-axis zeroed out, vacuums turned on, spindle speed set, and G-code launched.



CNC mills are better than lasers with regards to their ability to carve in full 3D, cut through thicker materials, and don't leave any char on the edges of parts. However, they are somewhat slower than lasers and definitely take more training to master. CNC machines are less expensive than lasers but be very careful what you buy. A lot of CNC mills or build yourself kits are more for learning about how CNC works than actually being practical for making model ship parts. It is better to spend more up front and get or build a machine with ridged gantries, precises steppers, and a strong spindle if you plan to make hundreds or thousands of model parts over your hobby career.





Only a small portion of model ship builders use milling machines and lathes. An even smaller portion use CNC milling machines. Although this tool is indeed very specialized it is good for the modeling community to be aware of the technology and what it can produce. The next time you are out kit shopping and the description says it includes 3D CNC carved figureheads or other decors you know you are getting something pretty special. For those of you looking for a kit that does not have so much laser char to sand away, try one of Caldercraft's kits whose parts are all CNC cut.

For my friends and I here at Weasel Works, the CNC milling machine is just another tool in our arsenal in our quest to elevate our model building beyond what we could do yesterday. Hopefully this short overview gave you some idea what CNC is all about. Steady as she goes!

Kit Review - Flying Dutchman, Occre Kit

By Robert Hunt

I recently finished building the Occre kit, The Flying Dutchman, and wrote a practicum on how to build this model. The practicum only covers the hull construction but not the masting and rigging. I will be doing that separately at a later date and writing a practicum on that subject also. I also added lighting to my model using off the shelf parts that I purchased from Amazon. This model is Occre's representation of the pirate ship in the movie, Pirates of the Caribbean. Photo 1 shows my completed model.

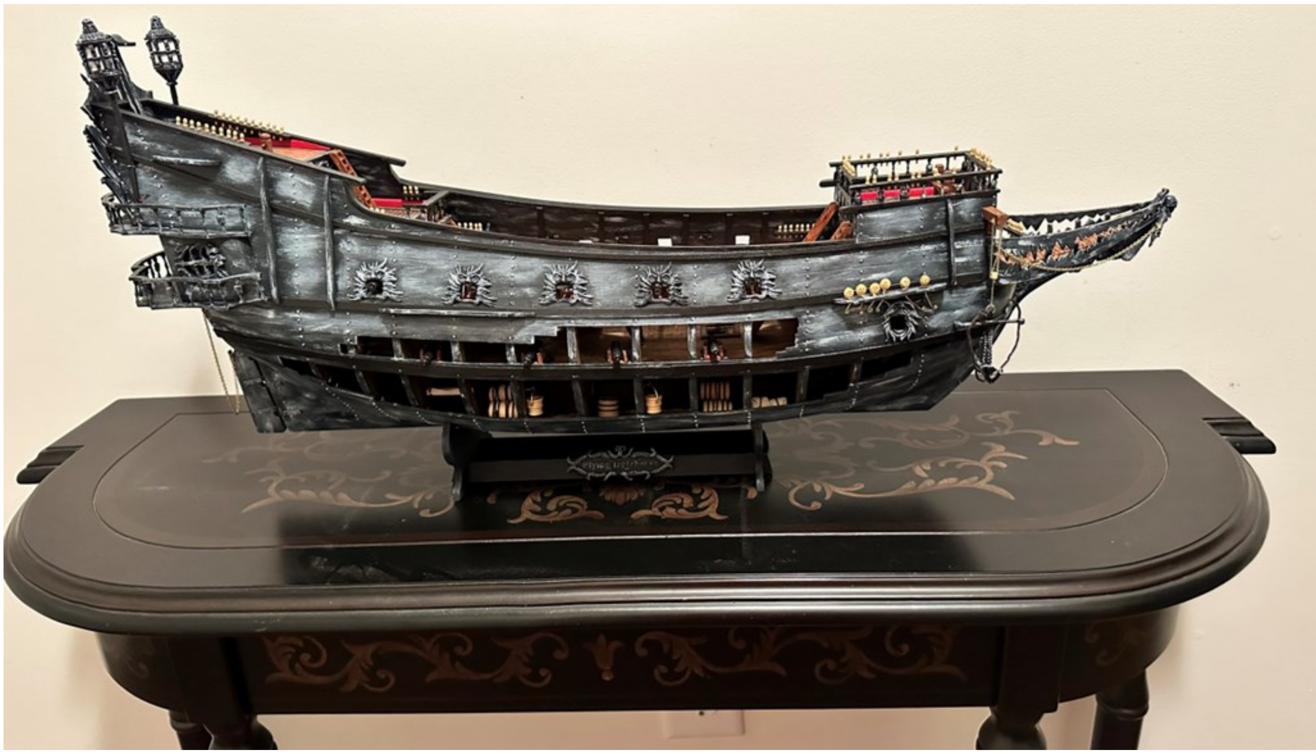


Photo 1

I had previously built the Occre kit, Golden Hind, and had some difficulties with what I considered to be design issues. I have been building model ships for over 35 years including both kits as well as scratch built true plank on frame models. I have designed five true plank on frame kits that I once produced myself on a weekly basis which I called Craftsman Style kits. Therefore, I feel that I have the experience to be a good judge of kit quality as well as design when I actually build these models myself rather than just look at the contents of the kit.

It has been my experience that every kit has certain issues regardless of the kit manufacturer. Such issues can be issues with the quality of the parts or issues in design that cause the model builder difficulties in building the kit. Like the Golden Hind, this kit had issues with the design. The quality of the materials was excellent.

The decorations seen in Photo 1 were all excellent in quality. They were cast in a very hard metal unlike so many other kits with cast metal decorations that used a lead based metal that is much softer. The detail in these castings was clean and sharp.

The kit also included some photo etched parts such as hinges to doors and the windows in the stern lanterns. These parts were also very clean and nicely done.

The fittings in the kit included pre-made hardwood mast wedges, boxwood deadeyes and blocks, boxwood belaying pins, brass gudgeons and pintles, brass rods of two different diameters, wooden barrels and buckets, cast metal cannon barrels, cast metal cannon balls, and ladders that the modeler must assemble.

The stripwood in the kit included limewood, sycamore, and walnut strips of various dimensions, and dowels which were clean and made of sycamore as well. Many of the wooden parts in the kit were laser cut such as cannon carriages, stern gallery railing and base pieces to make the side gallery rails, the center keel and bulkheads, a ship's boat, and various other details to the model. The laser cutting was fine and nicely done.

The kit contained a very large photo essay that showed how to build the model entirely in photos. There was a second accompanying set of printed instructions in several languages that also contained various scale drawings of the masts and yardarms with identifying parts numbers. They were very minimal though and not of much help.

Included with the instructions and drawings was also various rigging drawings showing standing rigging, running rigging, and a belaying diagram. There were other drawings that showed the layout of each billet of laser cut parts with identifying parts numbers of each part on each billet, and finally, several pages of part numbers that identified the part dimensions, the part name, the quantity of the part, and the type of material the part was made of.

Overall, this was a very complete and comprehensive looking kit. However, looks can be a bit deceiving at times. I would say that from a quality standpoint, this is an above average quality kit. On a scale of one to five stars, I would give this kit four stars. I say that because although the quality of the metal castings is excellent, the metal they are made of is impossible to drill a hole through and they are impossible to bend. Flat carvings do not fit a curved hull very well. The instructions were so minimal that they were of little use at all. The parts list was disorganized making it difficult to find a particular part number which was needed to obtain its dimensions For those reasons I have to take away one star on kit quality.

Design is a different issue. Like the Golden Hind, this kit has a number of design issues that made it difficult to build. However, I was able to find workarounds or solutions to those issues which I have written about in my newest practicum on building the Flying Dutchman kit. I hate to say it, but even the most experienced model ship builder will have difficulties building this model because of these design issues. Let me begin with the most basic issue in the design - the overall accuracy of the kits design compared to the actual ship used in the movie. I'm sorry to say that this model does not look like the actual ship. Photo 2 shows the actual ship that appeared in the series of Pirates of the Caribbean movies.

Photo 2

There are so many differences in the design of this kit compared to the actual ship, that I have to wonder what source of materials was Occre using to design their kit. Okay, so the Occre model is not a very good representation of the actual ship. What else is wrong with the design?

The first design issue I encountered was the assembly of the basic hull structure. Unlike most plank on bulkhead kits, the bulkheads in this kit are not solid. The kit was designed to show one side open so that interior details and lighting would be visible. To achieve this openness, the center keel had to be open as well. Therefore the slots in the center keel were very short as were the slots in the bulkheads. They both were slightly wider than they should have been which made the fit of the bulkheads rather loose.

Most kits have additional horizontal pieces that tie all of the bulkheads together and help to ensure that the hull is square vertically as well as horizontally. This kit does not have such reinforcing pieces. The lack of such pieces makes it very difficult to ensure that the bulkheads are square in both directions when you glue them to the center keel. I didn't realize just how important the alignment was in the vertical direction until much later in construction when parts didn't quite fit properly. In my practicum I explain how to ensure that the bulkheads are kept properly aligned in both the horizontal and the vertical direction.

The next design issue I ran into was the way the sub-decks were put together. First, the fore and aft sub-decks were in two pieces. Second, the full deck length consisted of fore deck parts, a center deck part, and aft deck parts. The beams these decks sit on do not form a straight line fore and aft. The deck line curves upwards at the fore and aft ends which you can see even in the actual ship.

Because these sub-decks are thicker than most models, the intersections created sharp changes in the flow of the sub-decks. I think the design should have been two long sub-decks that met at the centerline, but my issue with the design of these decks is how the kits photo essay showed them to be planked. Each deck was to be planked individually, then installed on the model. That method made them very visible as separate pieces of decks, not one long coherent deck. The photo essay also showed each row of deck planking to be short strips with alternating butt joints on every other row. This is not how a ships deck was historically planked.

Photo 3

I realize that this actual ship that Hollywood built is not a real ship, but I do feel that it should have adhered to some historical accuracy in the construction of the ship. For example, looking at Photo 2, you can see that the channels are placed much higher on the ship than they are on the Occre kit. Because the kit has the channels so much lower the metal castings interfere with the chainplates. Many had to be routed forward of the carvings. This is definitely a "No-no." Because the wind blowing on the sails comes from the aft end of the ship, the force against the mast, which are held in place by the shrouds, requires that the chainplates angle aft-wards, not forwards. Photo 3 on the previous page shows the fore mast chainplates.

Photo 4

Notice how the two forward chainplates are angled to towards the bow. This would never happen on any actual ship that actually sails. The chainplates themselves are a joke and very difficult to make. I only put them on the fore channel and will be removing them when I actually do the masting and rigging. They're made from scratch using brass rods in the kit. I think they look ridiculous, and they are very difficult to make because the rod is too thick and not easy to bend. I found more accurate chainplate parts similar to the ones on the real ship that are much more historically accurate.

The beakhead structure also has design issues. First, there is nothing in the photo essay that shows how to properly align those laser cut teeth parts. Those are suppose to be the head rails. Without some sort of to properly align those laser cut teeth parts. Those are suppose to be the head rails. Without some sort of reference point it is very easy to get them out of alignment. Photo 4 shows what I mean.

Can you see how the stem is not in alignment with the centerline of the model? It is angled to the port side. I had to completely remove it when I saw this. I test fitted the bowsprit which fits into a slot in the center keel thus keeping it aligned with the mast fore and aft. It went straight and the beakhead structure slanted off to the port side. Good grief! Fixing this problem caused damage to the two sides of the hull and added repair work.

What the photo essay should have shown was the bowsprit and masts temporarily installed so that the stem and laser cut head rails could be properly aligned. I call this a design issue caused by the designer not actually being the person who built the prototype model used for the photo essay booklet.

Other design issues I came across were minor issues except for the stern transom. The stern transom consists of a large laser cut vertical piece and the side gallery structure. The transom has a tab that fits into the floor of the upper gallery. The photo essay gives the impression that the transom is glued into a matching slot in the gallery floor part. It is not!

Because the photo essay is based on the model having lighting in it, you must remove the gallery structure to turn the lights on and off and to change the batteries when they go dead. First, the design has no way of locking this gallery structure in place. Second, the placement of the mizzen mast channel was too low and would be hit by the gallery structure when it was removed. And third, the angle of the stern transom as set by a laser cut wooden template does not match the actual angle of the stern area. Therefore, the stern transom part cannot be glued to the gallery structure. It must be glued to the stern itself which has.a smaller inner stern transom part. Therefore, the tab at the bottom of the large stern transom part will interfere with the removal of the gallery structure so it must be cut off.

Another design issue with the gallery structure has to do with the rails on both of these galleries. They are supported by metal castings of skeletons and bones. There's no reference marks etched into the floor of the galleries that would show you where to put these supports. There's also no physical way to attach them other than to try and super glue them to the wooden floor, which did not work for me. If I had designed this kit, I would have had pegs at the top and bottom of these cast metal posts which would have fitted into corresponding laser cut holes in the wooden floor and rails. Doesn't that seem logical. After all, ladders have steps that fit into slots of the side pieces. Even the kits elm tree pump had a peg that fit into a laser cut hole in the deck.

My solution to this problem was to first apply a white glue to the bottom of the support parts, and then apply a drop of super glue to the white glue. Believe it or not, this actually worked quite well, but if I hadn't come up with this solution, I doubt the rails would have stayed on with repeated removal of the gallery structure just to turn the lights on and off.

There's one other issue with the gallery structure that I had to solve. That is keeping the structure in place but making it possible to remove. First I tried velcro but that didn't work. Then I tried a magnet similar to the way I handle the lighting in the King of the Mississippi kit, but that didn't work either because there's no room to attach the magnet and its corresponding metal piece when the stern transom lighting is installed. My solution was to wedge the gallery structure in place using a scrap of wedge shaped wood lodged between the bottom of the gallery and the top of the rudder. It's not visible because I painted it black and it isn't at eye level when you view the model.

Some of the small design issues have to do with the finer details on the model. For example, the photo essay shows the cannon balls stacked dup in a pyramid pattern and super glued together. How man ships have you seen that have cannons balls stacked up on the deck? Zero. What would hold them in place and keep them from falling down and rolling all over the deck from rough seas tossing the ship about?

It's the little details that can ruin a model. I came across a number of them which I addressed in my practicum, but there's too many such details to put in this article. Often when you build a model ship, you have to be think several steps ahead or you'll paint yourself into a corner.

Overall, it was a fun kit to build and all of the weathering gives it an interesting appearance. I'm so used to building pristine looking models that I found it difficult to add the look of an old and weathered ship. At first I refused to do so and told my wife it was my representation of the ship right after it was launched. She didn't buy it and convinced me that it should be weathered looking. I cover how I did that in my practicum.

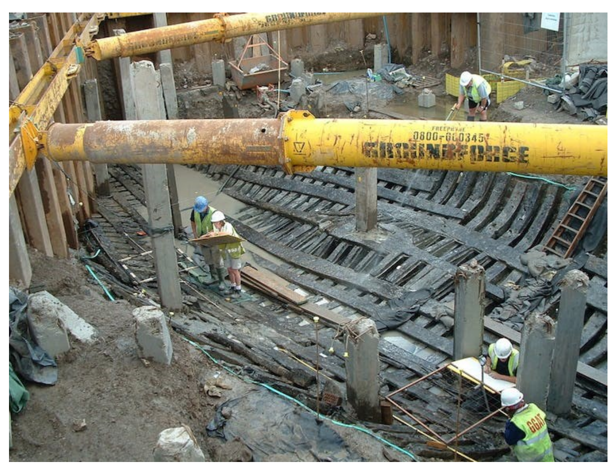
Bob Hunt

Newport ship: after 20 years' work, experts are ready to reassemble medieval vessel found in the mud

by Evan Jones, Associate professor, University of Bristol

An artistic impression of how the Newport Medieval ship may have looked . David Jordan/Newport Museums and Heritage Service

When construction work began on a new arts centre in Newport, south Wales, in 2002, the builders on site could scarcely have imagined what they would dig up. While excavating the foundations on the banks of the River Usk, a section of a medieval wooden ship was uncovered which had been perfectly preserved by the river's waterlogged silt. Archaeologists were called in and it soon became clear the vessel was extraordinary.



The Newport medieval ship as it looked in September 2002, months after construction workers made the discovery. Owain, CC BY-SA

This was not a coastal sailing boat that would have plied the Severn estuary up to the 19th century. Rather, it was a "great ship" by medieval standards, one that would have worked the long-distance routes of the Atlantic and Mediterranean. And yet, there it was, or at least a part of it, lying in an old slipway in what would have been a small Welsh port with a population of about 500 people during the Middle Ages.

The ship's remains quickly caught the public's imagination, with large numbers of local people visiting the wreck. It was a reminder that while Newport is best known historically as a 19th-century iron town, the city has a long history intimately connected to the sea.

So it was perhaps inevitable that locals were outraged when they learned "their" ship was simply going to be recorded where it sat, before being sampled and then bulldozed. The price tag just seemed too great; preserving the remains would take decades and cost millions.

The timbers of the Newport medieval ship undergo conservation in April 2008. Robin Drayton/Geograph, CC BY-SA

Excavations of other ships, such as Henry VIII's Mary Rose, had shown how expensive it would be. But local passion and campaigning outweighed such considerations and plans eventually changed. The ship would be saved.

Twenty years later and the task of excavating, preserving and recording all the timbers and artefacts is nearly complete. Attention is now turning to the reconstruction of the remains and consideration of how best to display the ship in the future.

Since its discovery, we have found out so much more about the Newport ship. It is not like the Mary Rose or the Vasa, a 17th-century Swedish warship recovered in 1961. Both are complete vessels, full of artefacts. The Newport ship is the surviving part of a vessel that was wrecked while undergoing maintenance in a dry dock.

A 'petit blanc' small French coin was found within the keel of the Newport Ship. **Newport Museums and Heritage Service**

Most of the contents, and almost all of the upper parts of the structure, were salvaged and removed before a medieval slipway was built on top. So, only part of the hull remains intact. However, that fragment is important both because it is wonderfully preserved and because is the largest and most complete section of a 15th-century European ship discovered to date.

Also, dendrochronology (the scientific method of dating tree rings to the year they were formed), has made it possible to pinpoint that the ship was built in 1450 in the Basque country. The same techniques, when applied to the collapsed scaffolding used to hold the ship in place, can tell us when it was wrecked to within a year (1468). This has made it possible to situate the vessel within an eventful period, at the dawn of Europe's age of discovery and the Wars of the Roses.

The Newport Medieval ship represents the final flourish of a shipbuilding tradition that stretched back centuries. This involved the construction of a shell, made from overlapping planks, into which a relatively light frame was fitted to provide stability.

It has more in common with Viking longships than it has with the skeleton-built ships of the early modern period. But the Newport ship is far bigger than Viking vessels. In its heyday it was capable of carrying 160 tuns (about 320,000 pints) of wine in its hold, on a voyage from Bordeaux.

One of the most positive aspects of the project has been the way archaeologists, curators, scientists and other experts have collaborated. A team of historians I gathered examined the context of the ship to better understand the world it came from.

New recording techniques were pioneered too, including the 3D scanning of every timber. This made it possible to digitally reconstruct (and even 3D print at scale) the whole vessel. In many ways, it was fitted back together long before the real timbers even touched each other.

Most recently, the project curator, Toby Jones, has worked with the Friends of the Newport Ship charity to produce complex visual reconstructions of the vessel. 3D animated films are being used to communicate the nature of the vessel to the public, as well as providing experts with fresh avenues of research to explore.

Courtesy www.theconversation.com

Deck Furniture on Model Ships - Part III

By Robert Hunt

Binnacle

Most ships had what is called the ***binnacle***. The binnacle was always placed in front of the ship's wheel It would house a compass and a light of some kind such as a lantern or a candle. It's purpose was to keep water off of the compass and candle which were used for navigation. The candle lit up the compass at nighttime. Photo 1 shows a typical binnacle on the Caldercraft kit, *HM Bark Endeavour*.

Photo 1

The ropes shown in this photo held the binnacle in place on the deck.

Most kits will have cut-out parts to form the binnacle. The one shown in Photo 1 had all of the parts as cut-out parts. Assembly is very simple. The sides are glued to the front and back, and the top is glued to the box assembly. This is usually the case in every binnacle I've seen in a model ship kit. Photo 2 shows the binnacle on the Caldercraft kit, HMAV Bounty. Again, you see that the binnacle is in front of the ship's wheel. I question the design of this binnacle/ship's wheel because there is no room for the person steering the ship to stand. Typically the binnacle is not right on top of the ship's wheel like this, but the binnacle would not fit between the belaying pin racks which had posts that went down through pre-cut holes in the deck so I was not able to move it forward and away from the ship's wheel.

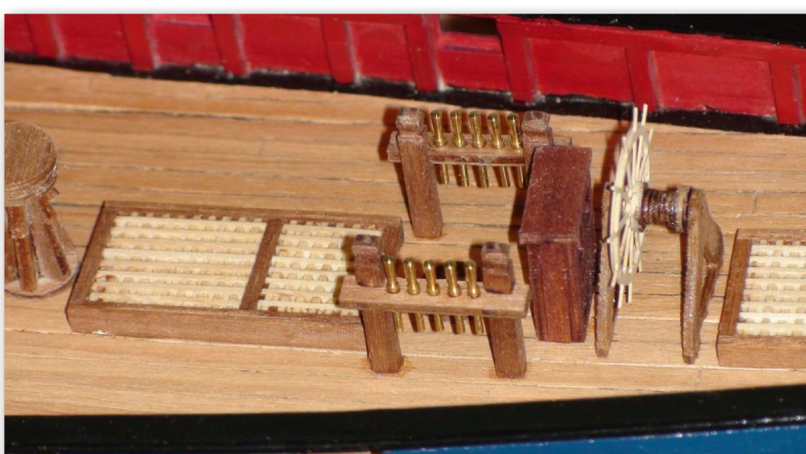


Photo 2

Photo 3 shows the binnacle on the Model Shipways kit, Fair American. Notice that the ship's wheel is attached to a bulkhead but the binnacle is still placed forward of the wheel. The binnacle is made from cutout parts.

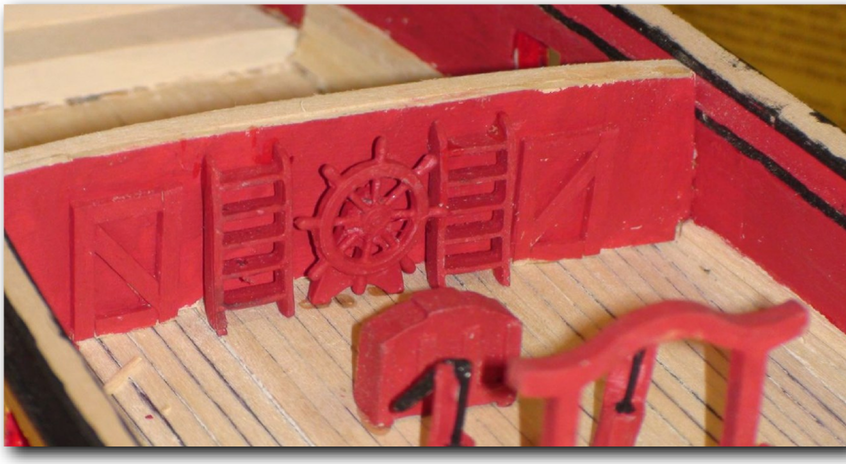


Photo 3

Some binnacles found in kits will have glass windows on the aft side. The glass is usually clear acrylic sheet stock as shown in Photo 4.

Photo 4

Always check your kit plans for the proper location of the binnacle. You can use the ship's wheel as a point of reference in taking measurements to the binnacle location.

Ladders

Any ship with multiple decks will have a ladder or two that lead down through a hatch to a deck below. Making ladders is fairly simple. Every ladder consists of two sides and a number of steps. Some kits will include cutout parts, while others will require you to make these parts using stripwood.

The steps will always be glued into grooves in the side parts. Some kits will include side parts that have the grooves milled into them. Others will require you to cut those grooves yourself. To do that, use your kit plans to first mark the location of the grooves. Photo 5 (on the next page) shows a ladder side on which I have marked the location of one of the grooves with a fine pencil.

Photo 5

To cut the grooves, use a #11 X-acto knife. First press the blade across the marked line. Then come in at a slight angle to cut away wood to one line and then the other line. Cut about halfway through the wood of the side part. You can also square up the cutout area by turning the blade and making it parallel to the surface of the wood. Use the tip area to cut away the wood and square up the sides of the groove.

Photo 6 shows a ladder side where the grooves have been cut and the steps have been glued into the grooves using CA glue.

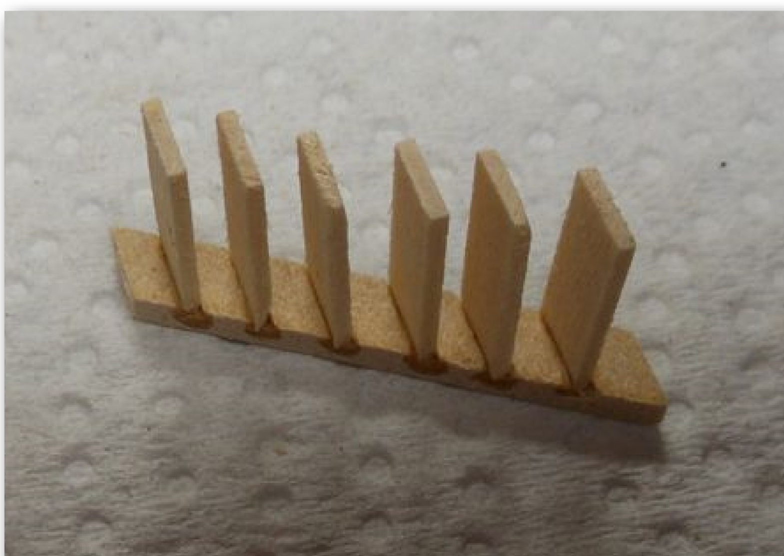


Photo 6

You'll need to use tweezers to insert each step into a groove. Apply the glue to the groove first and then a small amount to the end of the step.

Photo 7 shows the completed ladder. Once the glue has set on the steps and on one side, add glue to the grooves of the other side and install it over the steps, guiding them into their corresponding groove using tweezers.

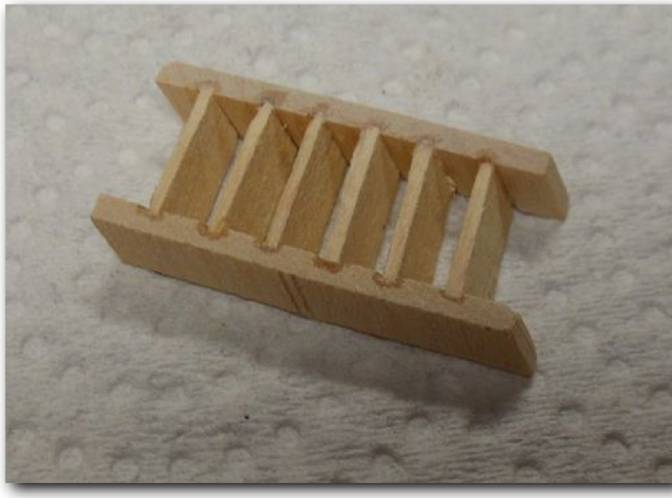


Photo 7

After the glue has set up, sand the surfaces as well as the sides by laying a piece of 150 grit sandpaper on a flat surface and rubbing the part across the surface of the sandpaper. Apply a coat of Wipe-On-Poly using a small paintbrush before gluing the ladder into position on the model.

Photo 8 shows this ladder after it was sanded and installed on the Artesania Latina kit, Swift.

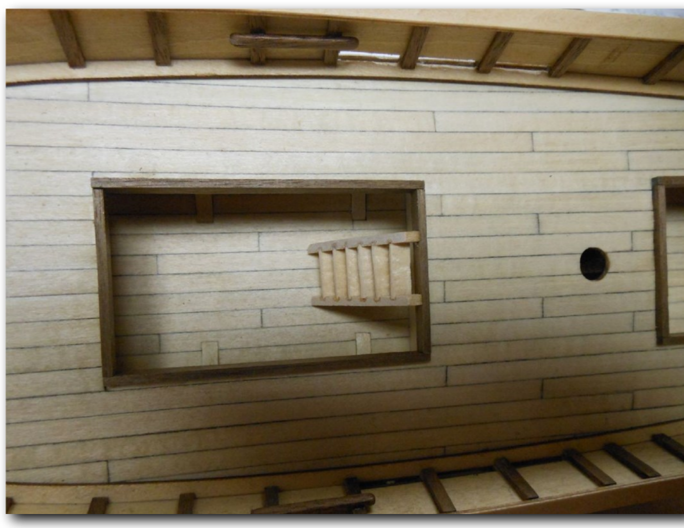


Photo 8

There is not much else to be said about ladders. They are all built the same way but will vary in length. The top back edge of the two sides is usually sanded flat at an angle where it sits against the hatch coaming.

Mast Wedges

Most kits will include cutout parts for the mast wedges. The mast wedge was a ring around the mast hole as shown in Photo 9 of the Artesania Latina kit, Swift.

Photo 9

Often the outside edges of the wedge are beveled or rounded. You can do this with a small sanding block or sanding stick.

If your kit does not include cut-out mast wedges, you can make them easily, however, there is a trick to this. The trick is to drill the hole through the piece of wood first. You will want to use a large enough piece of wood (usually scrap wood from a parts billet) that the drill bit won't split the wood. You can start the hole with a small bit such as a 1/8" bit, and then use small rattail files to enlarge the hole. Photo 10 shows how I drilled and opened up a hole in a piece of kit strip wood. I made the area where the hole is thicker by adding a second layer of the strip wood.Once the hole has been opened to the size of the mast, cut the part out using a #11 X-acto knife by first cutting a square around the outside of the hole. The width of the square will depend on the amount of wood you want to leave around the hole, but in most cases will be such that the you can leave 1/16" to 1/8".

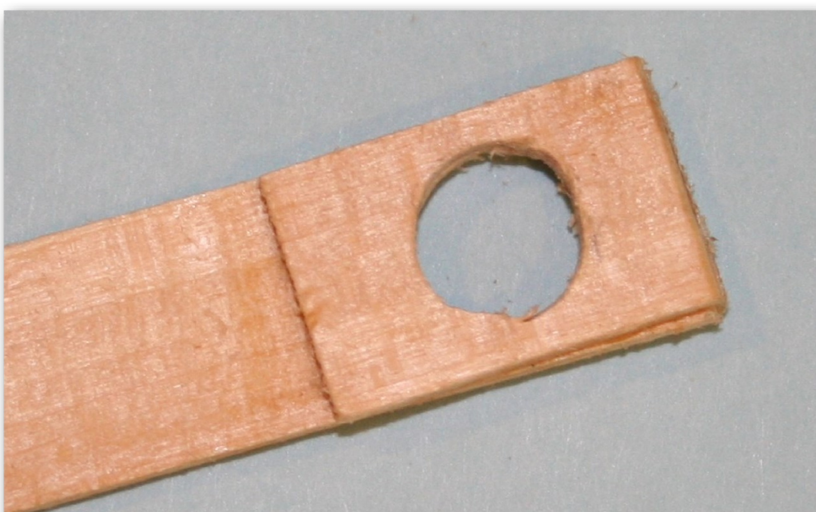


Photo 10

Now with the cutout square that has a hole in the center, use the #22 X-acto knife to cut away the corners of the square using a chopping cut to whittle away the square edges and produce a rough circle. Finish up the part with a sanding block or sanding stick. Photo 11 shows the mast wedge after trimming away the wood around the hole with my X-acto.

The mast wedge should fit over the hole in the deck planking and allow for the dowel that the mast will be made from to fit snugly. For a mast with a rake in it (the mast tilts backwards) you may need to use your rattail file to file a slight angle in the hole's fore and aft edges. You can also do this with a #11 X-acto knife.

Photo 12 shows my Armed Virginia Sloop model which has a rake to the aft end of the ship. If you look at this photo and think about how the mast tilts backward, you can see that the mast wedge could not allow this if the inside hole that the mast passes through was perpendicular. In the drawing below, the blue lines represent the angle that has to be cut using a file or X-acto knife to allow for this rake.

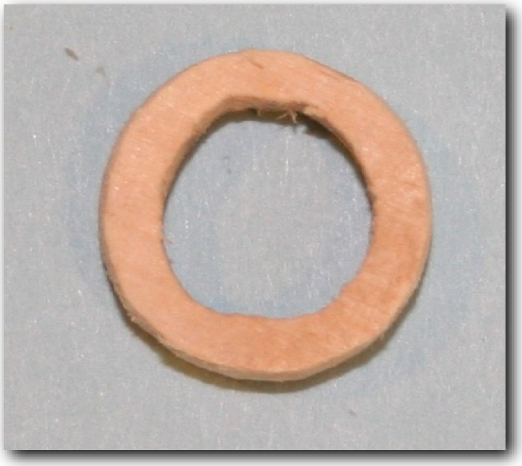


Photo 11

Photo 12

Timberheads, Knightheads, and Rail Parts

Every period ship had timberheads on the main rail or caprail. These were used to tie off various rigging lines. On actual ships the timberheads were the tops of some of the frames. Photo 13 shows timberheads at the bow of the Armed Virginia Sloop kit.

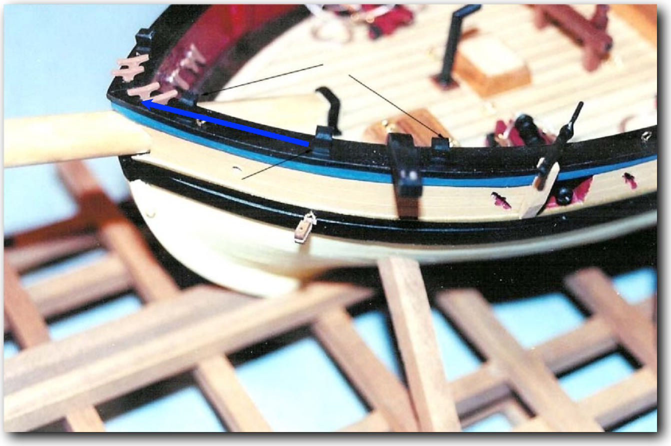


Photo 13

A similar frame top at the bow of the ship on each side of the bowsprit was the knighthead. Like the timberhead, the knighthead was used to tie off certain rigging lines coming from the bowsprit. Photo 14 shows a knighthead being added to the HMAV Bounty by Caldercraft.

This particular knighthead had an additional support piece as seen in the photo. You can also see several timberheads as well. Both the knightheads and timberheads were painted black after being installed.

Photo 14

Because most kits are plank-on-bulkhead, these timberheads and knightheads are separate parts that are added on top of the main rail or caprail. They are usually made from stripwood, but I have also seen them come as cutout parts, depending on the kit maker and the size of the model.

All of them have a beveled top which is beveled on all four sides as shown in this drawing.

In addition to these parts, you will often find special blocks attached to the surface of the main rails or caprails. These blocks are used in conjunction with certain rigging lines and are usually cutout parts. Photo 15 shows one such block at the stern of the HMS Vanguard kit by Amati.

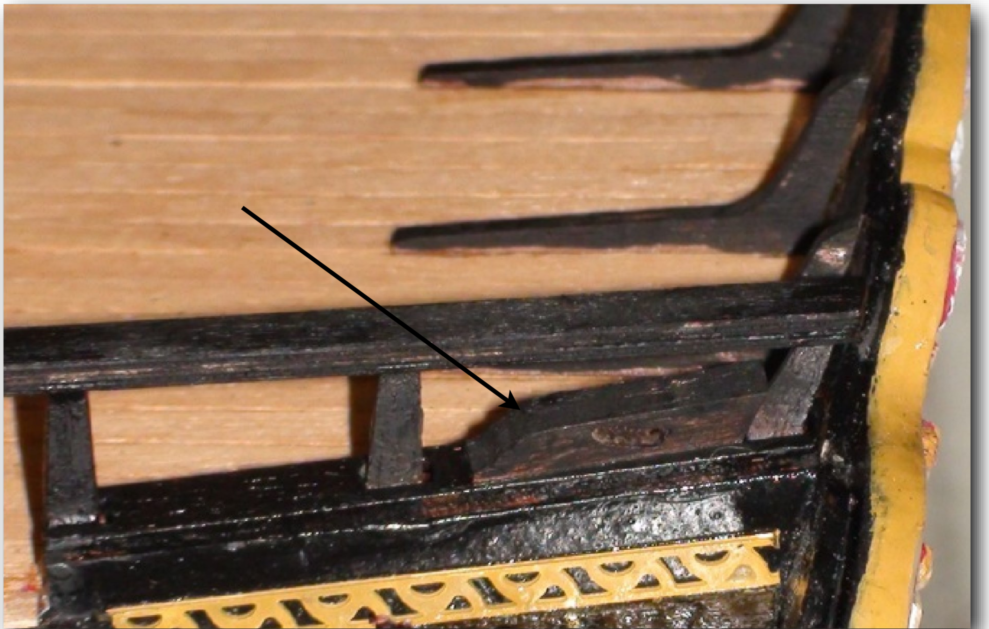


Photo 14

These blocks are commonly referred to as snatch blocks. Your kit plans will show these special blocks if they apply to your particular model.

Larger ships such as the HMS Victory and HMS Vanguard, had special iron fittings that were bent in the shape of a letter "U" and attached to the tops of the main rails at the center area. Photo 16 shows these fittings on the HMS Vanguard kit.

Photo 16

As you can see, rope was threaded through an eyelet in each fitting. These fittings usually had a netting between the rope side that were used to hold the many hammocks for the crew.

Photo 17 shows the actual hammock holders on the British warship, HMS Victory.

Photo 17

These U-shaped fittings will usually come as photo etched parts and will have a pin on the bottom portion that is inserted and glued into a hole that you must drill in the surface of the rail. CA glue works best when gluing metal to wood.

Bulwarks Details

The bulwarks are the sides of the upper hull. This is where the gunports are on small warships, such as the Armed Virginia Sloop. The bulwarks were often painted red, but I've seen them painted green on the USF Constitution and yellow ochre, as seen in Photo 17 on the HMS Victory.

There are certain features often attached to the bulwarks that are used in conjunction with the rigging. A common item found on many models is the kevel. The kevel was a type of cleat used to tie off rigging lines.

Photo 18 shows a typical kevel on the Artesania Latina kit, Mayflower. This particular kevel is simply two pieces of stripwood glued to one of the frames with a cross piece of stripwood.

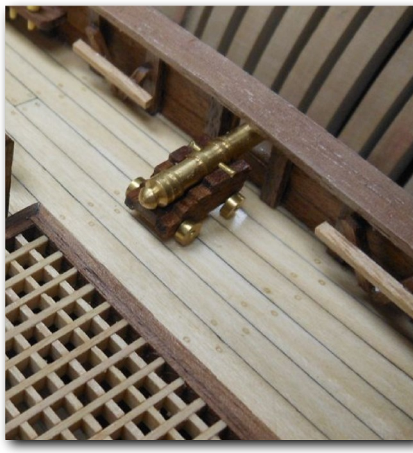


Photo 18

Some kits might include cutout kevels. Like the ones shown above, they are simply glued to an exposed frame. Your kit plans will indicate where to place these along the sides of your decks.

Cleats will usually be made of wood, or in some kits, cast metal. If made of cast metal, you can either paint them a wood color or paint them black to simulate a cast iron cleat.

Photo 19 shows some cleats attached to the bulwarks of the USF Constitution kit by Model Shipways.

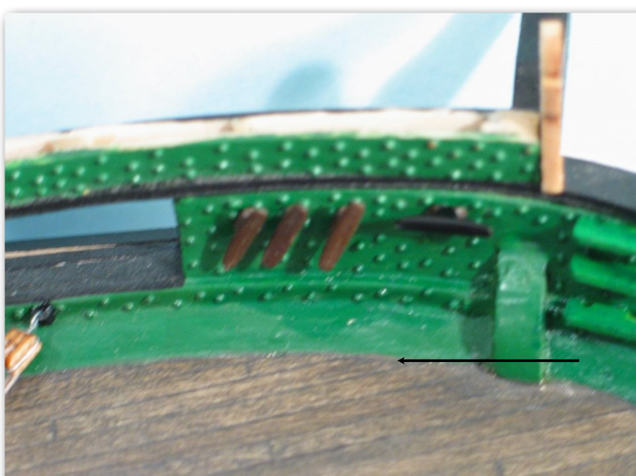


Photo 19

You might also find cleats on the deck of your model. They are simple to install. Drill a small hole with your pin vise and super glue the pin on the bottom of the cleat into the hole. Check your kit plans for the location of your cleats and kevels.

One last detail that you'll find attached to the bulwarks of most model ship kits is the cathead. The cathead appears on both the port and starboard side of the bulwarks on most models. Its purpose was to aid in the raising of the anchor. Photo 20 shows the catheads on the HMS Pegasus model.

Photo 20

Because this ship has a forecastle deck, the catheads appear to be attached to the deck. Actually they are attached to the underside of a deck beam as shown in Photo 21. This is a photo of my HMS Kingfisher kit which is the same class of ship as the Pegasus.

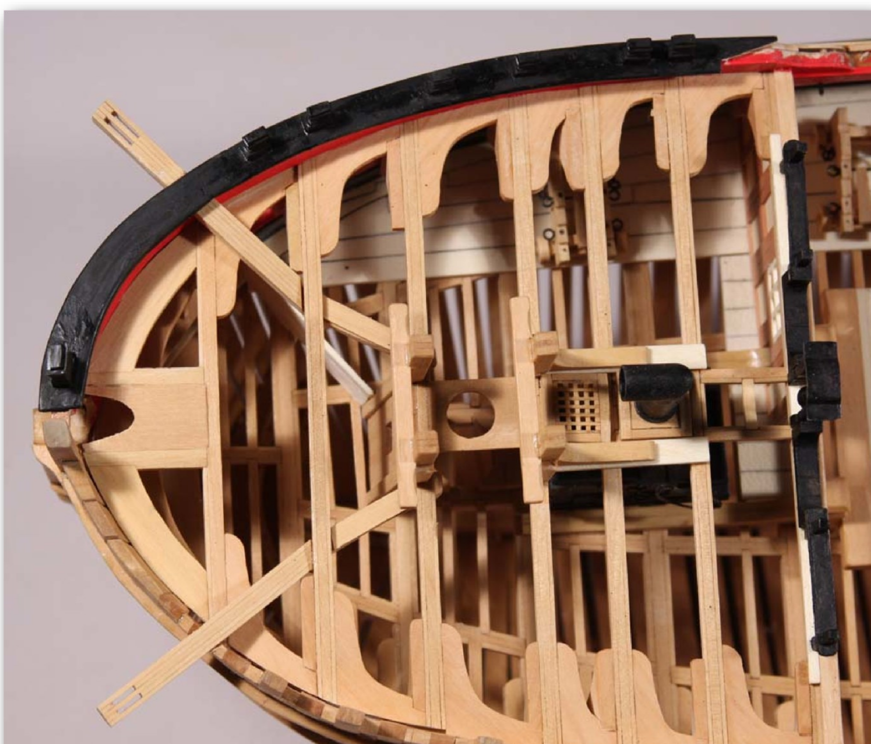


Photo 21

Notice the slots that are cut through the ends of the catheads. These slots will have sheaves inside of them that serve as a kind of pulley to aid in the lifting of the anchor into its stowed position on the side of the ship. You will find this feature in most almost every cathead you will encounter.

Most kits will instruct you to drill a hole with your pinvise at each end of the slot so that a rope can pass up through one hole and down through the other. Photo 22 demonstrates this on my scratch built Hannah model.

I have drawn a circle around the four holes that represent the slots with the sheaves in them. You can see the thin rope threaded through these holes. It starts with a knot in the end going down through the left outer hole to a double block (not visible). Then the rope returns to the right outer hole in the cathead. From there it goes down through the right inner hole, through the double block, and back up through the left inner hole where it is then tied off to a cleat.

Photo 22

The cathead in this photo is actually attached to the side of the bulwarks. It is made of two pieces of wood attached to each other to form an upside down "L" where the outer corner of the shape is rounded over. Photo 76 shows this cathead from the inside.

Photo 23

As you can see, a vertical post forms the lower portion of the cathead and is attached to a frame top. The upper portion sits on top of the caprail and this post and hangs outward. The double block that is rigged to the outer end of the cathead has a hook on it that allows the anchor ring to hang from this hook.

Photo 24 shows this setup. These are the anchors for my Armed Virginia Sloop model which has the exact same cathead and anchor setup as the Hannah.

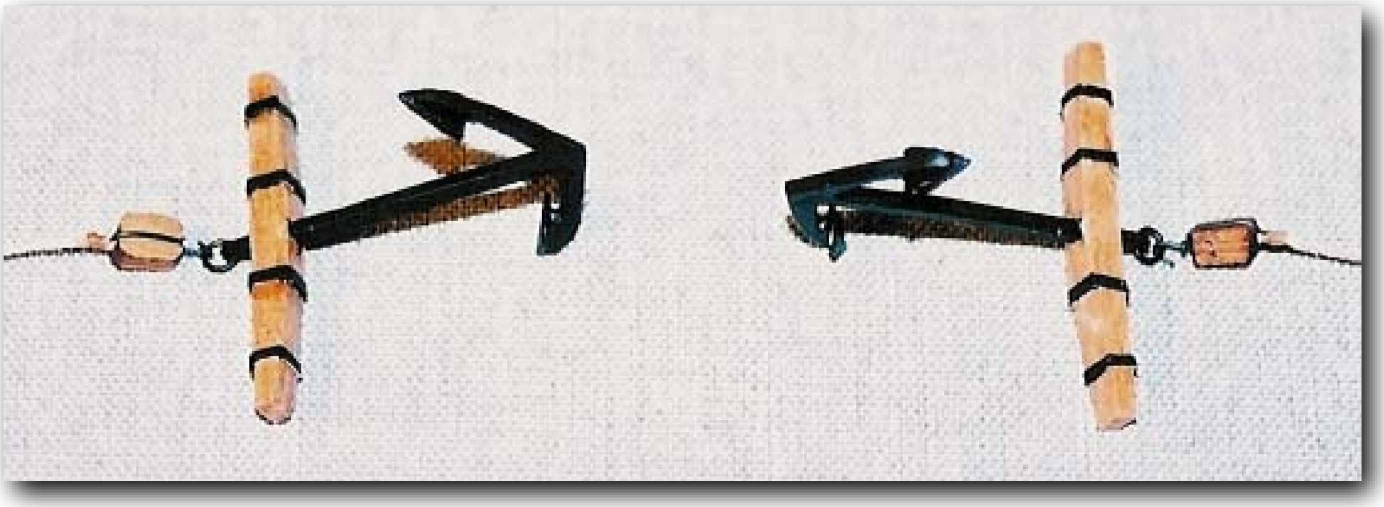


Photo 24

Your kit plans will show the location of the catheads and how they are attached. You will probably have to drill the four holes through the end of the catheads using a pinvise, and your kit will provide rigging line and blocks to rig the cathead.

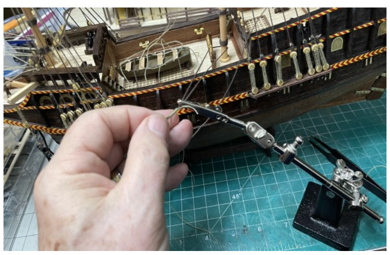
This concludes my discussion on deck furniture. I will discuss cannons in an upcoming article.

The College of Model Shipbuilding

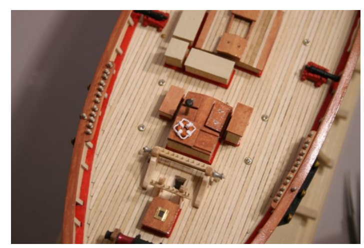
by Robert E. Hunt @ www.lauckstreetshipyard.com

Hello, my name is Bob Hunt. I own a small business called Lauck Street Shipyard. I specialize in providing very detailed instruction on how to build model ships from kits or from scratch. Other subjects are also covered in detail as well, which are all part of my College of Model Ship Building

The college of Model Shipbuilding has courses for all levels of experience. For beginners, we have Prep School Courses. These are based on kits that are easier to plank, such as Artesania Latina kit, Bluenose II.



Our Freshman Courses are also a good place to start if you are a beginner. We have a number of these courses to choose from including our most recent Golden Hind, which is based on the Ocre kit. It also has an optional masting and rigging course.



Our Sophomore Courses are designed for modelers with some experience who want to advance their skills and Techniques. One of the most popular Sophomore Courses is the Pride of Baltimore which is based on the Model Shipways kit.

Our Junior Courses are for modelers with much more experience who want to start learning kit bashing and scratch building. These courses include the Mamoli kit Rattlesnake and the Panart kit HMS Victory.

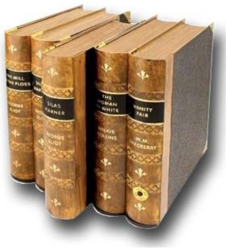
I hope you'll check out my website today to see all of the course I offer. Just go to https://www.lauckstreetshipyard.com. We also have video Practicums, and other very detailed Practicums on special subjects as learning CAD, learning different planking techniques, and how to rig a model ship. I also provide a private support forum for those who purchase one of my courses. If you have any questions please send me an email at lauckstreet@gmail.com

Lauuck Street Shipyard is a division of LSS Enterprises Inc. (A West Virginia S Corp)

The Modelers Work Bench

“Plank Benders”

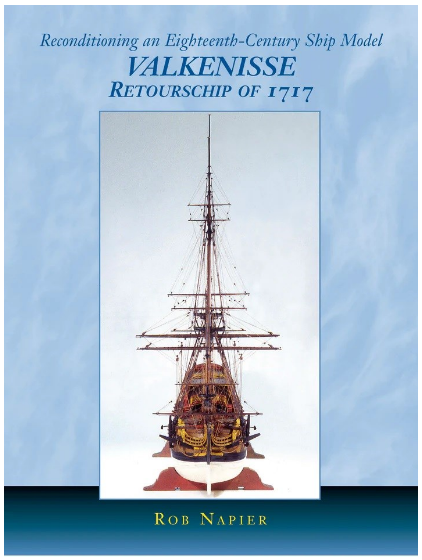
The modelers plank bender is one of those irreplicable tools that most all modelers have on their work-bench. Its one of the tools I believe that you should have early in your model building ventures. It will save you a lot of headaches and frustration over broken timbers As can be seen above they come in different sizes and shapes from crimping type to heated bender (highly recommended).



The Book Nook

Books of interest for the Model Ship Builder

New & Old



Reconditioning an Eighteenth-Century Ship Model

VALKENISSE Retourschip of 1717

By: Rob Napier

ISBN-10 : 0982057903

ISBN-13 : 978-0982057902

Pages: 253

Publisher: Seawatch Books

Whether a damaged model is one year old or 300, putting it back together can be a daunting task. Learn how one of the best in the world at reconditioning, Rob Napier, goes about working on the hull and re-rigging a 300 year old model of a Dutch East Indiaman. From research to fitting the last piece of rigging, Rob's book covers it all. Four removable sheets of plans are pocketed in the back.

Upon completing your order, you will receive an email with an activation link that will allow you to set up an account to our e-Library. Once you create a password, you will be redirected to a page to either link to our online library or download the reader to your Mac or PC (iOS version coming soon).

Genes Nautical Trivia

Sails & Rigging

R	S	G	N	I	H	S	A	L	N	R	E	E	J
E	E	P	D	R	A	I	L	L	A	H	S	H	I
K	L	H	G	T	L	E	R	E	V	I	R	D	B
N	B	E	N	N	I	K	C	O	T	T	U	F	N
A	M	N	I	A	F	U	V	A	N	G	O	G	I
P	I	I	V	D	T	F	E	E	R	A	C	N	P
S	H	L	R	N	E	L	D	I	R	B	T	I	R
S	T	T	E	E	E	C	I	L	P	S	E	L	A
S	T	A	S	P	L	A	Y	O	R	V	V	S	H
U	Y	R	E	L	A	G	N	I	T	R	A	M	T
R	E	S	A	G	N	I	Z	I	E	S	E	B	A
T	S	L	E	E	C	H	D	U	O	R	H	S	C
K	C	O	L	B	H	T	E	E	H	S	S	K	W
L	U	A	H	T	U	O	L	S	N	U	T	S	U

CATHARPIN	COURSE	BLOCK
BRACE	BRIDLE	DRIVER
FUTTOCK	HALLIARD	HEART
JEER	JIB	LASHING
LEECH	LIFT	MARTINGALE
OUTHAUL	PENDANT	RATLINE
REEF	ROYAL	SEIZING
SERVING	SHEAVE	SHEET
SHROUD	SLING	SPANKER
SPLICE	STUNSL	THIMBLE
TRUSS	TYES	VANG

Genes Nautical Trivia

William Kidd

Each letter in the phrase has been replaced by a number
Solve this quote by William Kidd

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

2 1 / 12 13 18 / 3 19 23 21 / 22 21 24 / 12 13 18 / 26 19 12 / 3 19 23 21

22 21 24 / 14 18 3 / 2 1 / 12 13 18 / 20 13 / 1 24 13 26

19 14 13 19 24 8 / 12 13 18 / 6 22 19 10 10 / 25 21 15 21 24

16 13 26 21 / 19 14 13 19 24 8 / 19 20 19 2 25

Genes Nautical Trivia

Answers

This is the code used to encode the quotation made by William Kidd

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
19	14	16	8	21	1	20	22	2	11	23	10	26	25	13	17	7	24	6	3	18	15	5	9	12	4