

INSTRUCTION MANUAL

MODELING THE  
*HARRIET LANE*  
◆ STEAM PADDLE CUTTER, 1857 ◆

**Technical Characteristics**

Scale: 1/12" = 1 ft (1:144)

Overall Length: 18-1/2"; Hull Length: 15-3/8"

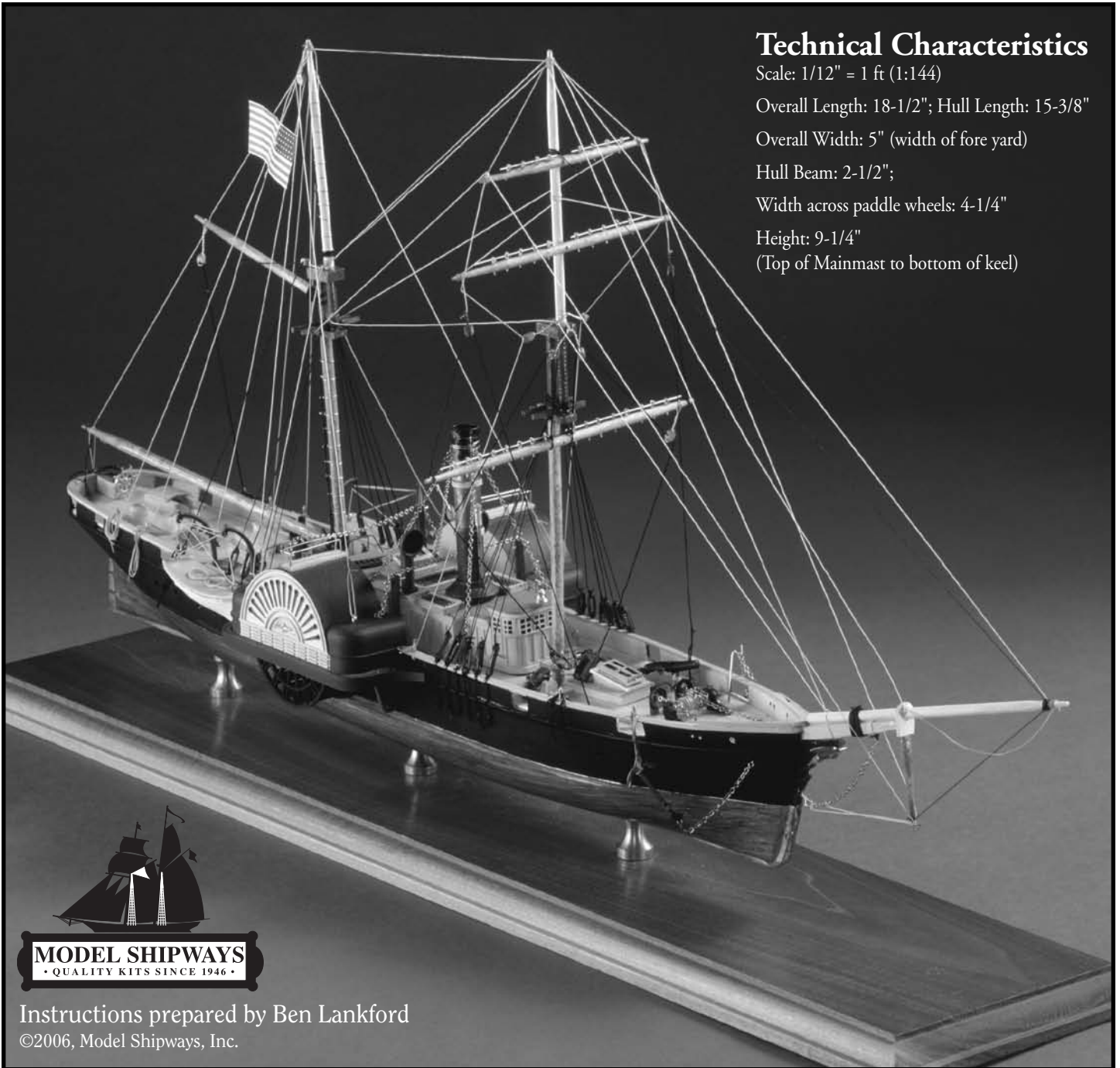
Overall Width: 5" (width of fore yard)

Hull Beam: 2-1/2";

Width across paddle wheels: 4-1/4"

Height: 9-1/4"

(Top of Mainmast to bottom of keel)



Instructions prepared by Ben Lankford

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**Model Shipways Kit No. 2010**

# HISTORY

*Harriet Lane* is an excellent example of the transition from sail to steam power. At the time, steam efficiency was not such that sail could be completely eliminated. The ship was fitted with two masts and rigged similar to a topsail schooner without a gaff foresail, obviously because of the funnel present between the two masts.

The ship was designed and built by William H. Webb in New York City in 1857 as a side-wheel gunboat for the US Revenue Service. Named for President James Buchanan's Niece, the ship was 180 feet in length, beam 30 feet, and speed of 12 knots. The ship became very active in the Revenue Service and in 1858-59 served with the Navy during the Paraguay expedition. In 1861, *Harriet Lane* took part in the attempt to relieve Fort Sumter in Charleston, South Carolina, when that vital position was besieged by Confederate forces. While so engaged, she fired the first US Navy shot of the Civil War, firing across the bow of the steamer Nashville.

*Harriet Lane* was officially transferred from the Revenue Service to the Navy in September 1861 and continued outstanding service until captured by Confederate forces in 1863. In early 1864 she was sold and converted to a blockade runner and renamed *Lavina*. In late 1864 she became the sailing merchant ship *Elliot Richie*. She remained in commercial service until 1884 when she was lost off Pernambuco, Brazil.

In 1984, a new Coast Guard Cutter was named *Harriet Lane*, honoring the original ship. Information on the history and etchings of both the old and new ship can be found on many internet web sites.

The kit of the *Harriet Lane* was developed in 1965 by John Shedd, the original owner of Model Shipways in Bogota, New Jersey. The plans were drawn by James F. Berge. While the plans are reproduced from the original, the kit has been updated and reissued by Model Shipways, Inc., the owner and manufacturer of Model Shipways kits. Kits are sold and distributed by Model Expo, a division of Model Shipways, Inc. New instructions are provided along with a more complete set of supplies for building the model. The fittings are now cast from lead-free Britannia metal and laser-cut wood parts have been added.

Because of the small scale used for this model, a lot of detail for the hull and rigging was simplified or omitted when the plans were developed. To try and add more detail may result in over scaling many items. So, use caution if attempts are made to enhance the detail. Always keep the scale in mind.

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## Before You Begin

The *Harriet Lane* is an interesting model for beginner and expert alike. This kit contains a solid hull which has been machine-carved from select, medium-hard, fine-grained basswood. This style hull provides a quick and easy lesson in the basic shapes and proportions of hull design and helps to develop woodworking skills. Although the exterior of the hull has been carved close to the hull lines as shown on the plans, further carving is necessary for reasons of accuracy. (Carving and finishing the hull to its final shape are discussed in the instructions.)

## Working with the Plans & Parts

Before starting model construction, examine the kit and study the plans carefully. Familiarizing yourself with the kit will serve two purposes. First, it will let you determine that all parts have been supplied as listed. And second, you'll be surprised at how quickly handling the parts allows you to better understand the kit requirements. Try to visualize how every part will look on the completed model. Also, determine ahead of time what must be done first. The instructions will help you in this regard, but a thorough knowledge of the plans at the outset is essential.

It is also suggested that all small fittings and hardware be sorted into labeled boxes or compartments to avoid loss during the building process.

The *Harriet Lane* kit is manufactured to a scale of  $1/12" = 1'0"$  (1:144) and matches the plans. Consequently, most of the dimensions can be lifted directly from the plans using a "tick strip". This is simply a piece of paper (a roll of calculator paper tape works very well). Mark a dimension from the plan onto the tick strip and transfer it to the model.

The *Harriet Lane* kit is supplied with Britannia metal, brass, as well as wooden fittings to eliminate problems in making such parts from scratch. Because the Britannia metals contain no lead, there are no possible corrosion problems. Many of these fittings will require final finishing before installing on the model.

Before painting the cast-metal fittings, clean them up by removing all the mold-joint flash. To do this, use a No. 11 hobby blade to cut the flash, then sand with fine sandpaper. It is also suggested that you clean the fittings thoroughly with warm soapy water before applying primer. Make sure they are rinsed thoroughly and allowed to dry before painting.

## What You'll Need To Start

The following tools and supplies are recommended for the construction process. Modelers who have built before may have their own favorites. Almost all are available at [www.modelexpo-online.com](http://www.modelexpo-online.com).

### A. Knives and Saws

1. Hobby knife with No.11 blades
2. Razor saw or jeweler's saw

### B. Files

Set of needle files

### C. Sharpening Stone

Necessary to keep the tools razor sharp

### D. Clamps

1. A few small C-clamps
2. Several wooden clothespins
3. Rubber bands

### E. Tool Set

A small carving tool set or individual hand chisels for shaping the hull.

### F. Boring Tools

1. Set of miniature drills: #60 to #80
2. Larger bits for mast holes and airport holes
3. Pin vise

### G. Miscellaneous

1. Tack hammer
2. Tweezers (a few)
3. Small fine pointed scissors
4. Miniature pliers
  - a. Small round
  - b. Flat nose
5. Bench vise (small)
6. Beeswax block (for treating rigging lines)
7. 1/2" or 3/4" masking tape
8. Wire cutters (for cutting fine wire)

### H. Sandpaper

Fine and medium grit garnet or aluminum oxide sandpaper (#100 to #220 grit)

### I. Finishing:

1. Paint brushes
  - a. Fine point for details
  - b. 1/4" to 1/2" flat square for hull

**J. Supplies:** (will be covered in detail in the Painting & Staining section and throughout instructions)

1. Paints
2. Primer
3. Stain and Varnish
4. White or Carpenter's (yellow) Wood Glue
5. Five-minute epoxy
6. Contact or model airplane acetate cement
7. Cyanoacrylate (Super) Glue

**Note about glues:** White or Carpenter's yellow wood glue will suffice for most of the model. Five-minute epoxy provides extra strength for gluing fittings. Because white or yellow glues will tend to warp the scored-

sheet decking, use a contact cement or model airplane type acetate cement. Cyanoacrylate (Super) glue, called CA glue for short, such as Zap is excellent for quick adhesion and is ideal for dabbing onto a rigging seizing to hold it in place. The best CA glue for most applications is a medium viscosity gap-filling type. The watery-thin type is recommended only to fill a narrow crack by capillary action. For CA glue, you can also purchase a liquid accelerator such as Zip Kicker. A spray or drop of the accelerator will instantly cure the glue. This is handy to eliminate clamping parts for long periods of time waiting for glue to harden.

Use CA glue with caution. You can easily glue your fingers or eyelids together and the fumes can burn your eyes. It would be a good idea to have a bottle of CA debonder on hand. This product will dissolve the glue if you do get it on your body.

## Painting & Staining

Much time and effort can be saved and a more professional result can be obtained if the finishing process is carried out during construction. Proper timing in application of finishes and the use of masking tape to define painted edges should eliminate unsightly glue marks and splotchy stained surfaces. In the end, following these general suggestions will be to your advantage.

### Paint Colors:

A color scheme is given on Plan Sheet 2. However, the following modifications/additions are suggested:

**Masts and Spars-** A pine, or maple stain would be a better choice than burnt sienna paint.

### Decorative work on sides of the paddle box-

White with black or gray in the indents. Paint the sides of the paddle box in way of the laser-cut decorative pieces Black. The Black will show thru the slots in the decorative piece.

### Paint:

Use a flat-finish paint. Model Shipways line of acrylic paints are available in the recommended colors. You may also purchase an already assembled *Harriet Lane* paint kit from Model Expo at [www.modelexpo-online.com](http://www.modelexpo-online.com).

### Primer:

Use a grey primer (one is provided with the Model Expo *Harriet Lane* paint kit. The grey color will highlight sanding scratches and other defects better than white primer. Prime all woodwork to be painted, and prime all

metal fittings. Lightly sand the primed items. Use a spackling compound such as Pic-n-Patch brand to fill any scratches and defects, then re-prime.

## Stains & Finishes:

For natural finished wood, use a protective coating after staining, such as low-sheen polyurethane varnish. You can also use an oil-resin mix like the ones sold by Model Expo or Minwax.

For the spars, Model Expo stain or Minwax can be used. These are a combination stain-finish that will provide a light tone to the wood. The staining of all wood parts should be done before gluing, especially if any CA

glue is used. The stain will not penetrate dried glue and leave ugly white areas in the finish.

## Brushes & Procedures:

Use good quality soft sable or synthetic hair artist's brushes. A small pointed brush is good for details. For the main hull areas, use a 1/4" to 1/2" flat brush.

Before painting, clean the model with a tack rag. Apply your paint in smooth and even strokes, overlapping them as you go. Thin the paint enough to eliminate brush strokes, but not run. You will need three or four coats of the light colors to cover the grey primer and maybe only two coats of the dark. Check your finish between coats and

sand and add spackle as necessary to get rid of any blemishes.

You will be told how to mark the waterline location in Stage A. At this line, and anywhere else two colors meet, use masking tape. Electrician's black plastic tape or any of the hobby tapes made of plastic film are ideal. They leave a nice edge and are not overly sticky. Do not use drafting tape unless it is Chart-pak brand. The edges are somewhat wrinkled and paint may run under them. A good trick; seal the edge of masking tape with a clear flat finish and let dry thoroughly. This will really prevent paint from running under the tape.

# STAGE A: SHAPING THE PRE-CARVED HULL

Sanding alone will not shape the hull enough to precisely match the hull lines. Some carving is required, especially at the rail, keel, bow, & stern areas.

## 1. Using the Templates

For exact carving to hull lines, a template is required for the hull profile and each of the stations. You will find templates printed on heavy stock paper in the kit. Cut the templates out carefully with a No. 11 hobby knife. Do not use scissors! You will want a nice smooth edge.

## 2. Carving the Hull

Cut a wooden block from scrap to about 3" x 1" x 3/4" thick. Screw the block to the deck so the model can be held in a bench vise for carving. First, check the accuracy of the profile and correct it as necessary. Since there is a separate profile template for the forward and aft areas, make sure you don't get a knuckle at the keel. Keep the keel straight.

Next, mark the centerline, rabbet lines (where hull meets keel) and station lines on the model (Figure A-1). Note that the width at the keel, stem, and sternpost (rabbet to rabbet) is 3/32". Keep these areas flat as the 3/32" keel, stem, and sternpost will be glued on later. Place the station marks on the center of the hull bottom and on top of the rails so the marks won't be carved off as you work. Also, add marks for the width of the hull at each station on top of the rail. Measure the marks from the centerline of the model so the marks will be the same port and starboard.

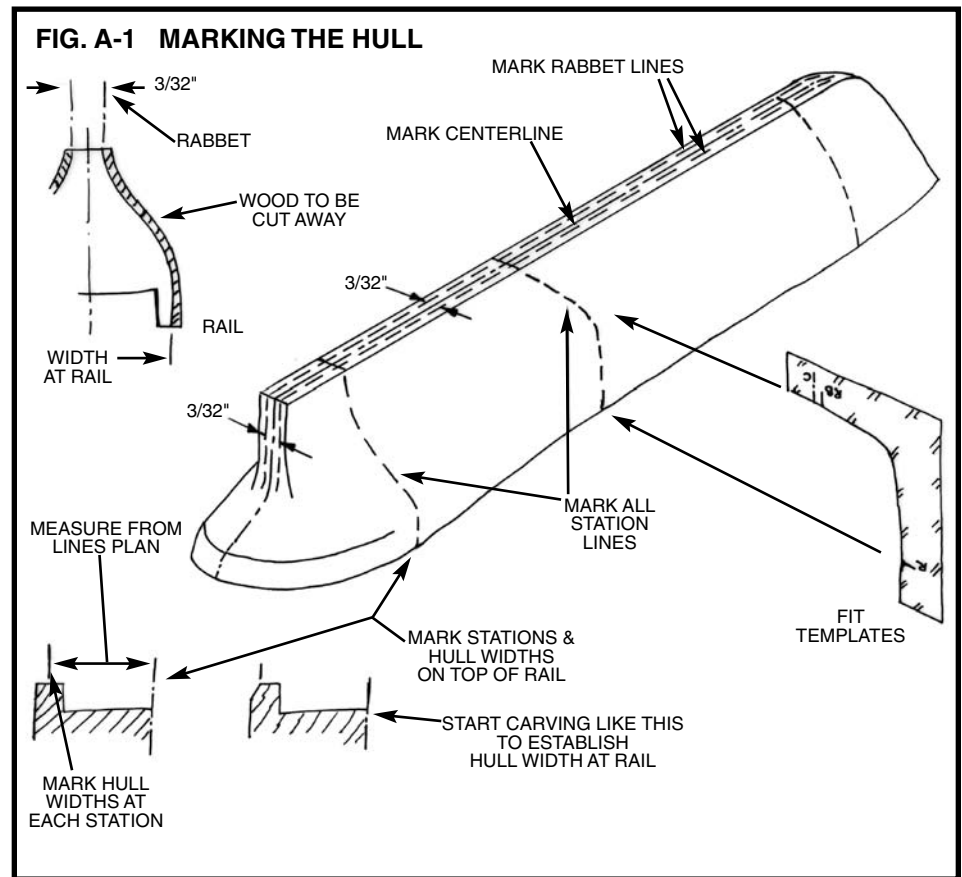
As shown on the sketch, a good way to start is to cut a slope at the rail back to the hull width marks to establish the width of the hull at the rail for the entire hull length. You now have a line to carve to as you fit the templates. Next, start carving approximately

at mid length (maximum beam) and progress forward, then aft, using chisels and gouges to cut away excess wood. Avoid carving against the grain by shifting forward or aft until you find a spot where you are going with the grain. Basswood carves easily, so you probably won't have much problem with the grain.

Carve very slowly and take off a little wood at a time. Fit the templates as you go. Carve until the template fits reasonably well, then use sandpaper to obtain the final shape. At first the templates will not fit very well, espe-

cially at the stern where a fair amount of wood needs to be carved off. You must compare the template to the hull and visually decide where to remove wood. Cut a little off, then re-check the template.

Finally, draw a few horizontal pencil lines (like waterlines) and the vertical station lines on the hull. Use these to visually check the shape of the hull. Hold the hull at various angles, and look to see if the pencil lines are fair (even). If you have any unfairness, dips or bump, they can usually be found with this visual check. You can also use a stiff stick of

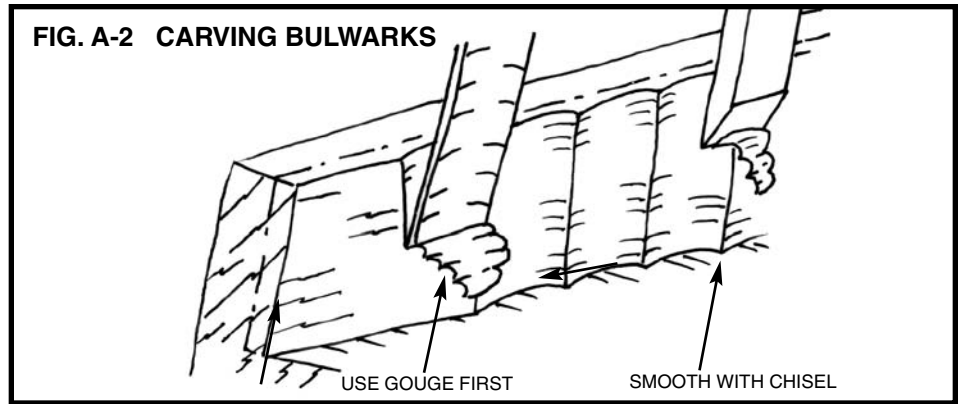


wood, about 3/32" square, and lay it on the hull at various locations. Dips and bumps in the hull will show up under the stick.

### 3. Carving the Bulwarks

Make yourself a temporary cradle to secure the hull while carving. This cradle also will serve to hold the model for most of the remaining work. Make the cradle so the model sits in it with its waterline parallel to the baseboard and table. The tops of the cradle should be below the waterline. Later, when you are ready to paint, attach a pencil on top of a wooden block and slide it along the table to mark the location of the waterline.

The machine-carved hull has bulwarks thicker than scale so they won't break while inside the kit box. The upper surface is cut to the underside of the bulwark cap rail. After you carve the outside of the hull, the bulwarks will be thinner. If more than 3/32" thick it will be necessary to



carve the inside of the bulwarks. The cap rail on top of the bulwark is 1/8" wide so must cover the bulwark. This is the most difficult part so work slowly as you carve. After carving, sand the surfaces smooth (Figure A-2). If you happen to have or want to buy a powered rotary tool like a Dremel, there are many cutters available to quickly reduce the bulwark thickness.

**Note:** The height of the bulwarks above the deck must be between 11/32" and 3/8" inboard. Some of the machine carved hulls may not provide this height. If this is the case, add wood strip on top of the bulwark to build up to the correct height. Make sure this is done before you cut out the openings for the gunports and paddle box.

## STAGE B: COMPLETING THE BASIC HULL STRUCTURES

### 1. Installing the Keel & Stem

The keel, stem & sternpost are cut from basswood. Taper the stem and install the parts. You might as well add the Eagle Figurehead casting at this time (Figure B-1). Use pins or dowels to position the parts before gluing. Scrape off any glue squeeze-out. Fill any gaps remaining at the glue joints with wood filler and then sand..

### 2. Installing the Rudder

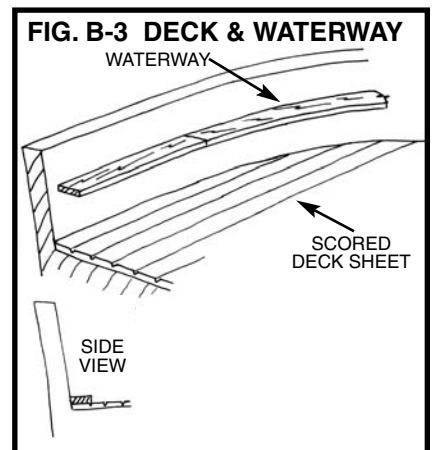
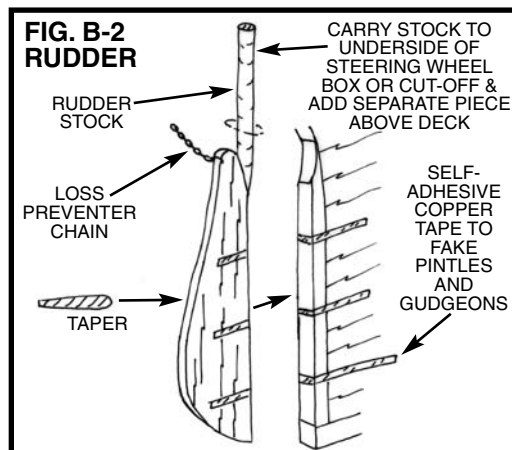
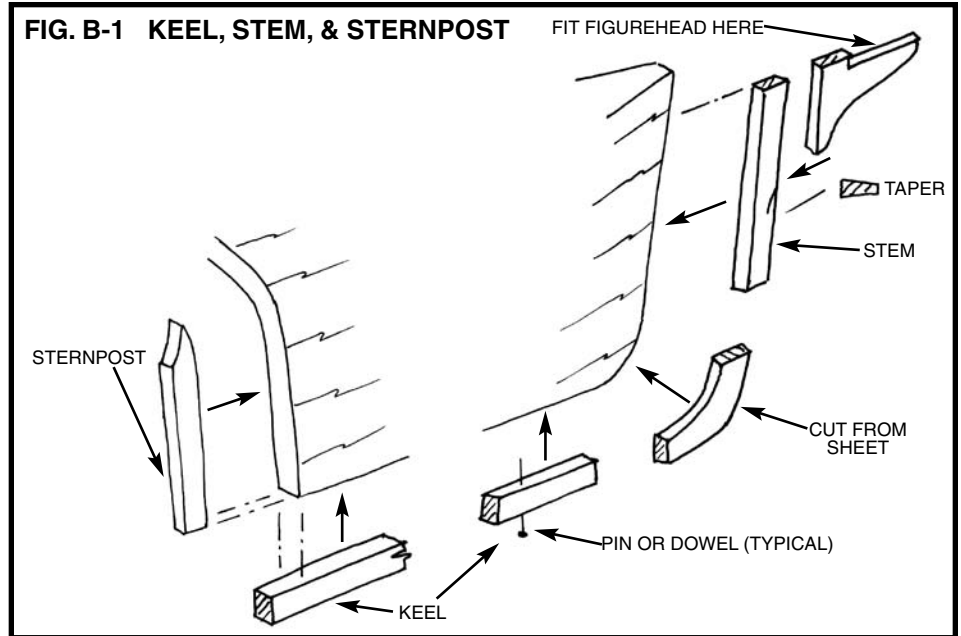
Cut the rudder from stripwood. It can be shaped and installed now or later. The rudder is tapered and has a round front edge. The rudder stock can be made long enough to go thru a hole in the hull all the way up to the underside of the steering wheel box. As an option, forget the hole, cut the stock at the bottom of the hull and add the top portion as a separate piece when you make the steering wheel box. For the pintles & gudgeons, fake them using the self adhesive copper strip included in the kit. See Figure B-2 for construction.

### 3. Drilling the Larger Holes in the Hull

Before going any further with the details, drill all the large holes in the hull. These would include mast holes, holes for the airport fittings, and pilot holes in the keel for screws for mounting the model on a display base.

### 4. Holes to be Drilled as Work Progresses

There will be a other smaller holes to drill as the work progresses. For example, the hawse holes for the anchor cable are drilled through



the bulwarks forward. Holes will be required in the deck and cabin for fittings such as fife rails, compass, davits, and vents. You will also need to drill holes for inserting eyebolts that hold blocks for the rigging, jackstays, chain guys for the funnel and kingposts, for belaying pins, and rail stanchions.

## 5. Planking the Deck & Installing the Waterway

The deck planking supplied in the kit is a scored basswood sheet. To represent caulked seams darken the scored lines. To fit the sheet, first make a paper pattern of the deck area. Make sure the scored plank lines are parallel to the centerline when the sheet is installed. Glue the sheeting down with contact cement or airplane-type cement (see gluing notes in the Painting and Staining Section).

**Waterway** - Along the inside of the bulwarks, add a 1/32" x 1/16" waterway strip on top of the decking (Figure B-3). For the curved areas at the stern and bow where you cannot easily bend the strip, cut the waterway from the 1/32" wood sheet included in the kit.

## 6. Cutting Out the Gunports, Paddle Box Openings, & Bowsprit Slot

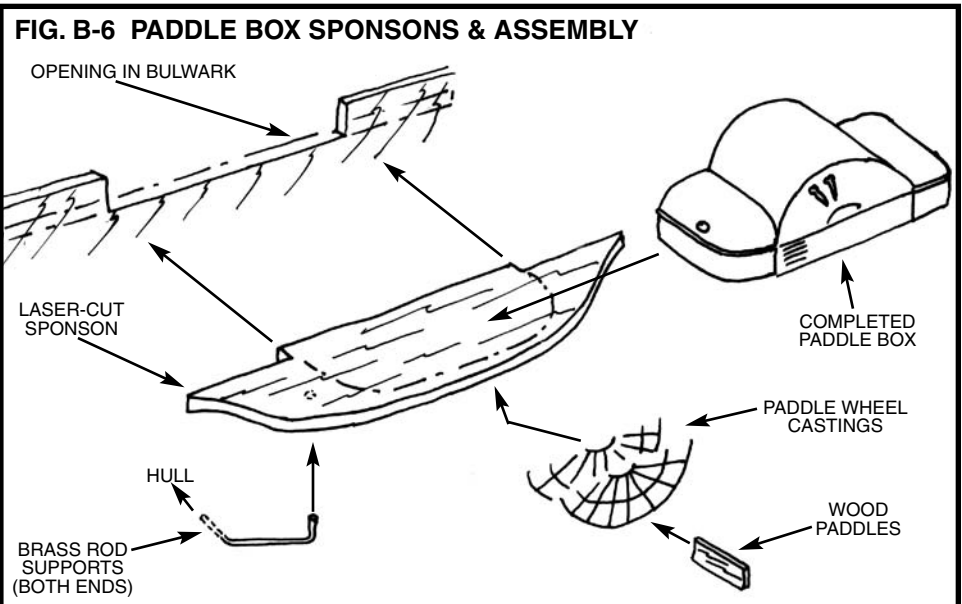
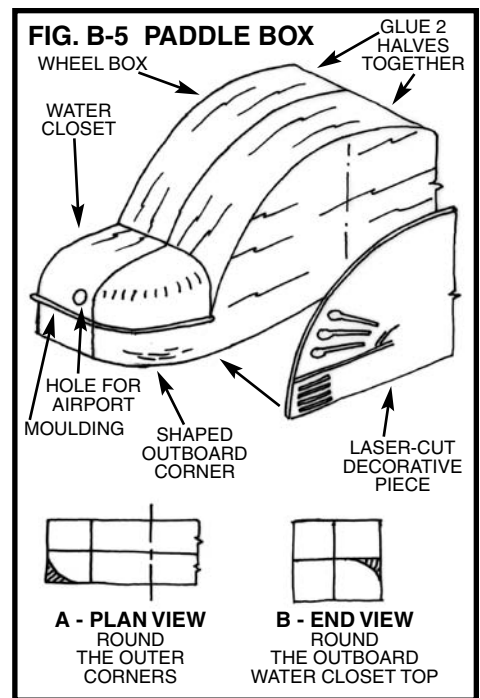
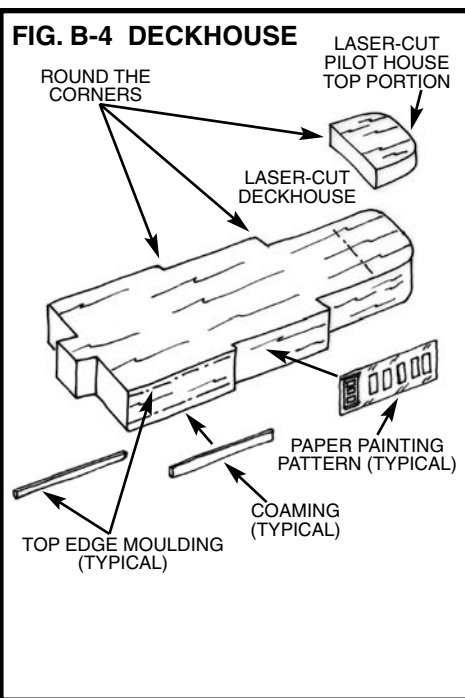
As noted earlier, make sure the bulwark height is correct before cutting openings. Cut the openings according to the plan. Use a fine razor saw blade or jewelers saw to cut the vertical sides and then cut the bottom with a hobby knife. The openings for the paddle box sponsons and the paddle boxes are cut flush with the deck. The bottom of the gunports and bowsprit slot are above the deck so measure the depth from the plan.

## 7. Installing the Deckhouse

The deckhouse is composed of two laser-cut parts. Glue the pilot house raised portion on the front of the large deckhouse part. Smooth out the joint and fill with wood filler if necessary (Figure B-4).

Before gluing the deckhouse on the hull, the sides should be painted. The kit contains a paper sheet of patterns to make painting easier. Cut out the patterns and white glue them to the sides of the deckhouse and around the pilot house in locations shown on the plan. Make sure they are smoothed out so no glue lumps build up under the paper patterns. Once dry, coat the paper with some flat clear coat.

Since the sides of the deckhouse is white, maybe you need only paint where wood or glue stains are showing. But painting all the white areas of the pattern would look better. The black printed lines can be left as is to show through. All these black lines would be very difficult to paint. If you do get paint on some of the lines, you can touch up the lines with paint or black ink. The pilot house window glass will look best if painted a pale



blue as if reflecting daylight. If painted black, it would obscure the window frames. Add 1/32" thick coamings and top edge trim all around the deckhouse for an authentic touch. The coamings and trim should also be painted white. When gluing the coamings, have the bottom just slightly below the deckhouse. Pre-fit the deckhouse on the deck and sand the bottom of the coamings to account for deck camber and to fit down on the deck without any gaps under the coaming. When all is well, glue the deckhouse to the deck.

## 8. Installing the Paddle Box Sponsons, Paddle Box & Paddles

**Paddle Box** - Each paddle box is composed of two laser cut parts. First, glue the two halves together and smooth out the joint. Next, round the outboard ends to the radius

shown on the plans (plan view). Then, round the outer tops of the water closets (ends of the paddle box) per the section view on Plan Sheet 1 (Figure F-5).

Drill holes and install the airports (large ones in the kit) on each end of the water closets. Paint the outer side of the paddle boxes black in way of the paddle wheel. Paint the laser-cut decorative sides white, with the indents black or gray, and glue them to the sides of the paddle box. The black paddle box will show thru the slots in the decorative piece to appear as holes. Add 1/32" square moldings which are in line with the bulwark rail. The water closet doors inboard can be outlined with ink, painted, or drawn on a paper sheet and added like the deckhouse.

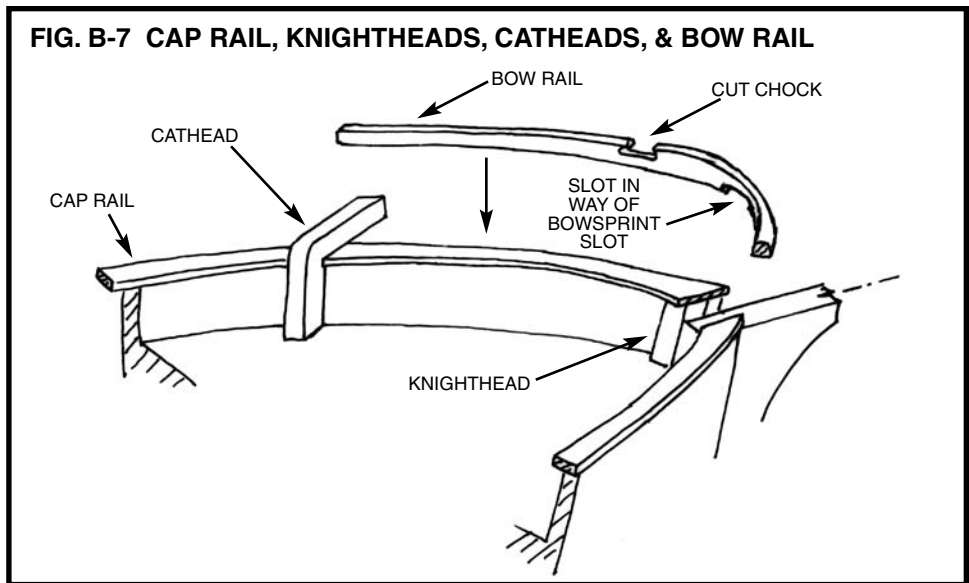
**Paddle Box Sponsons** - The sponsons are laser-cut parts. Drill holes in the bottom of the sponsons and the hull side for the

supports which are made from brass rod. Before installing the sponsons on the hull add the paddle box and the paddle wheel frames (castings). Make sure the alignment is correct. The centerlines of the wheel must be in line with the centerlines of the paddle box. Cut the wooden paddles from strip-wood and glue onto the frames. The sponsons fit in the opening cut in the bulwarks. The bottom of the center portion of the sponsons fit on top of the deck and the fore and aft ends butt against the hull side. After gluing the sponsons in place, add the rod supports (Figure B-6).

Paint the underside of the sponsons and the paddle wheel black.

### 9. Installing the Knightheads, Bulwark Cap Rail, Catheads, & Bow Rail

On each side of the bowsprit opening, install the knightheads at the bow. The cap rail is 1/32" x 1/8" strip. However, like the waterway, cut the curved areas from 1/32" sheet. After installing the cap rail, add the bow rail. Cut the catheads from wood and add at the end of the bow rail port and starboard (Figure B-7).



### 10. Installing the Outboard Shear Strake

This is a 1/32" square strip on the outside of the hull as shown on the plans. Note that the strip lines up with the bottom of the gunports, not at deck level. The deck is actually a little below the strip.

### 11. Installing Gun Port Lids

Cut the gun port lids from 1/32" sheet. Use the self adhesive copper tape for the hinge straps. Glue the lids open at top of the gunports.

## STAGE C: MOUNTING THE HULL

Before proceeding with additional work it is best to mount the hull. This step will help prevent details from becoming damaged during handling and will allow you to make any alignments that require a true waterline. Proper mounting of the hull is very important and will allow the accurate building and aligning of the remainder of the model. The kit does not include any parts for mounting. However, the following suggestion is provided.

**Mounting Board with Two Pedestals** - A common mounting for ship models is a wooden baseboard with two wooden or brass pedestals. For a homemade board, a nice looking hardwood such as cherry, walnut, and maple would be ideal. You can round the top edges of the baseboard, or cut a simple chamfer. If you own a router, or can borrow one, you will be able to cut a nice fancy edge on the baseboard. Stain the base if necessary and give it a few coats of varnish or finish like Minwax.

The pedestals could be wood or brass. For *Harriet Lane*, the pedestals should be located near station 5 and 10. The waterline should be level. If not, you can add a brass shim under one pedestal to correct it.

Baseboards and pedestals are available from Model Expo ([www.modelexpo-online.com](http://www.modelexpo-online.com)).

## STAGE D: ADDING THE HULL DETAILS

### 1. General Notes

Don't forget to file off any flash on Britannia metal fittings, clean the fittings and then prime them with grey primer before final paint. Locate deck fittings and mark their position. This can be done by measuring from mast holes, station lines and centerline (tick off from plans). Use as little glue as necessary on parts. Watch out for that glue squeeze-out. It's hard to remove if left to harden.

### 2. Small Vents, Compass, Hawse Pipe Lips, Deck Bitts, Bell, & Windlass

The castings for the small vents, bell, and compass will require holes drilled for the fittings before installing. Glue the hawse pipe lips, deck bitts, and windlass in place.

### 3. Guns

Glue the barrel castings on the carriage castings and glue the guns to the deck at their

gunports. Note that the Parrot Rifle is located on the port side forward, but most likely it was moved about on the real ship.

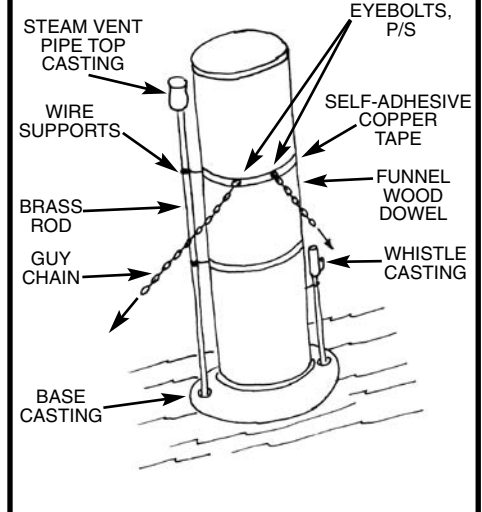
### 4. Davits & Boats

The boat castings can be detailed with wooden seats if desired or to avoid such detail, add a cover over the boat top with paper or cloth. Because of the small scale, use of blocks for lifting the boat by the davits would be a little tedious. Suggest hanging the boats by a wire and glue the boat to the davits. Drill holes for the davits in the deck and glue the davit and boat in place. Add the davit guys and boat straps (gripes) as shown on the plan with tan line. Install cleats inboard the bulwarks as shown on the plans for belaying the lines.

### 5. Fife Rails

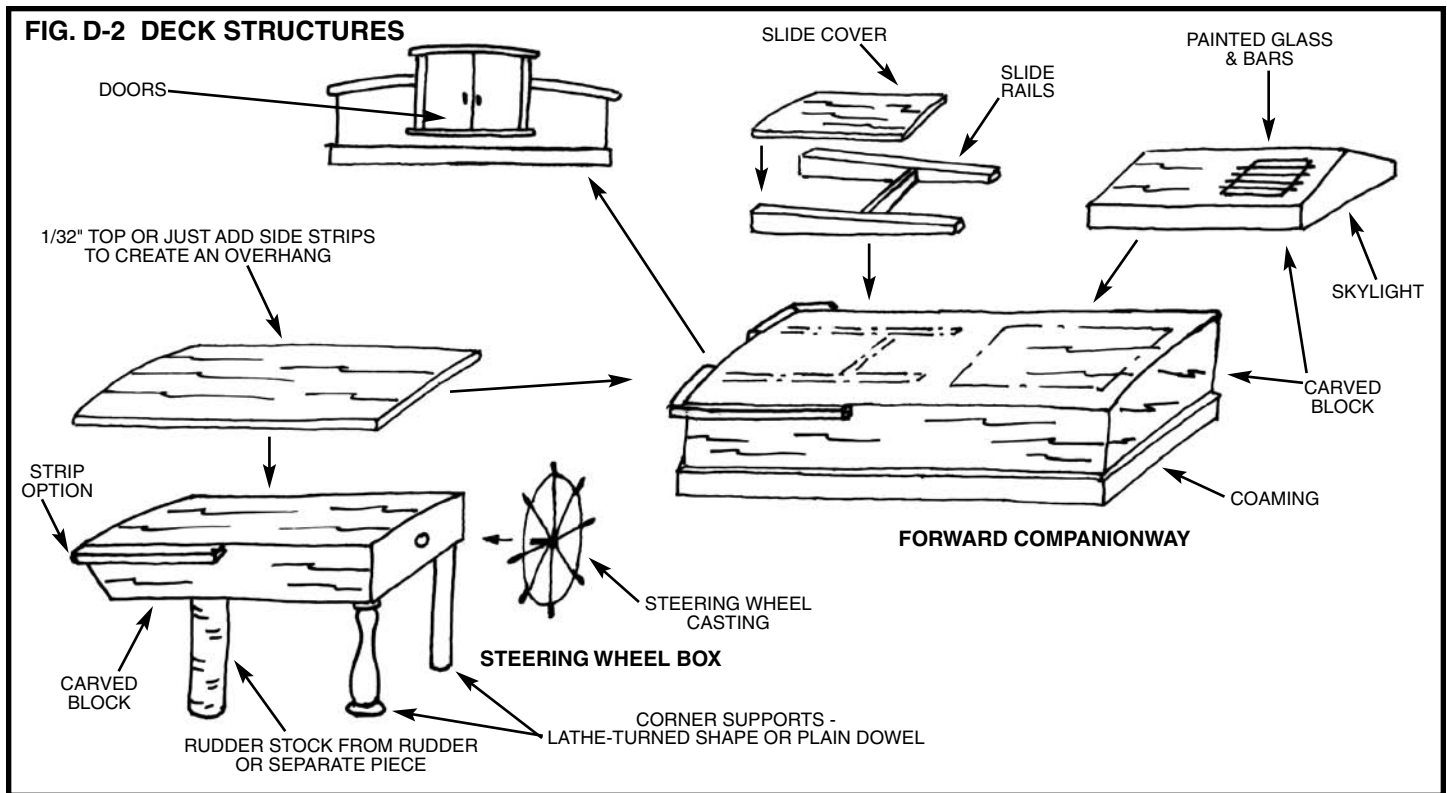
The fife rails are composed of two side rails and a cross bar. The side rails are Britannia castings. Make the cross bars from wood. Drill holes in the rails and cross bar and insert

FIG. D-1 FUNNEL



the belaying pins. Holes will also be required in the deck for the fittings.





### 6. Funnel, Funnel Base, Guys, Steam Vent Pipe, & Whistle

Cut the funnel dowel to length and fit into the base casting. Note the angle of the funnel. Add the bands on the funnel with self adhesive copper tape, then add eyebolts on the funnel and on the hull for securing the guy chains.

The steam vent pipe top is a casting in the kit. Use a 1/32" dia. brass rod for the pipe portion and secure it to the funnel with a wire strut. The bottom of the rod fits in a pre-molded hole on the aft side of the funnel base casting. The whistle casting is glued in a pre-molded hole on the forward side of the funnel base casting.

Glue the assembled funnel to the cabin and add the guy chains (Figure D-1).

### 7. Kingposts & Guys

The kingposts are 1/16" square basswood. Glue in place, but first add eyebolts for the guy chains. These kingposts are supports for the paddle boxes.

### 8. Anchors

Glue the cast stocks onto the anchors. Add the anchor chain and glue the anchors to the rail next to the catheads. Carry the chain thru the hawse pipes and wrap around the windlass. The tackle for the catheads is omitted because of the small model scale.

### 9. Ladders, Bridge, & Rail Stanchions

Cut the ladders to length and glue on the

deckhouse. The bridge platforms are 1/16" x 1/4" wood. Install on top of the paddle boxes, but first, drill holes and add the rail stanchion castings. After installation, add the rails using brass wire or black line.

### 10. Steering Wheel Box, Skylights, & Companionways

These structures are to be made from wood strips. Skylight glass and bars can be painted on. The steering wheel is a Britannia casting. Figure D-2 illustrates a method for making the steering wheel box and the forward companionway which also has a skylight. Other structures are similar.

## STAGE E: GENERAL MASTING & RIGGING INFORMATION

### 1. Rigging Identification

The rigging is identified by name on the rigging plan but not completely. The stays are all identified simply as stays. The instructions will be more specific, specifying "forestay" for example. If you are not familiar with the names and functions of rigging lines, the book *How to Build First-Rate Ship Models From Kits* by Ben Lankford contains a description of Nautical terms (See Bibliography).

### 2. Sails and Sail Lines

The model is designed, and parts are provided, only for a model without sails and the instructions address this approach. If you desire to add sails you can consult the books in the bibliography which will provide most

of the details necessary. Keep in mind, however, that a lot more parts and material would be required such as pin rails, sheave holes, additional blocks and rigging line, and sail material.

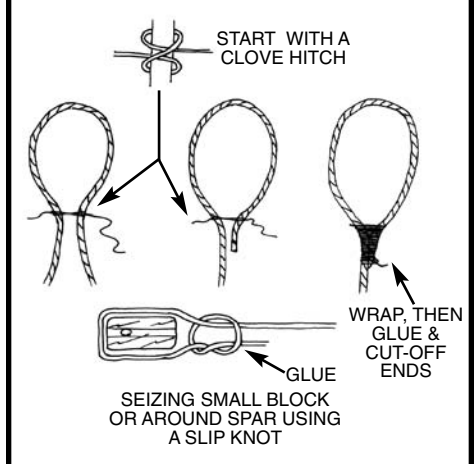
### 3. Block, Deadeye, & Line Sizes

**Blocks & Deadeyes** - 3/32" long single blocks and 3/32" diameter deadeyes are supplied.

**Rigging Line** - Use the 0.008" tan line for all running rigging. The black standing rigging line is supplied in two sizes. Use according to the following:

**0.012" line** - Use for topmast shrouds, topmast stays, footropes, stirrups, ratlines, and backstays.

FIG. E-1 SEIZINGS





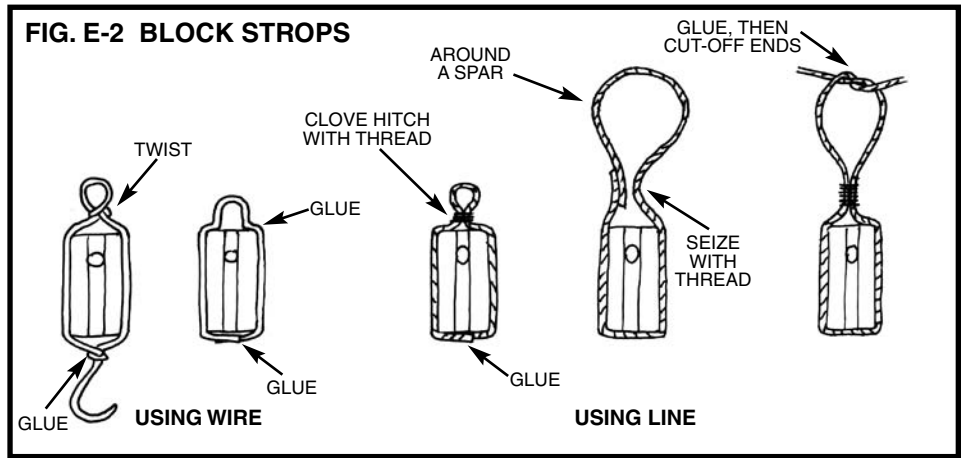
0.018" line - Use for lower shrouds, main stay, fore stay, jibboom and bowsprit shrouds, and slings for lower yards.

#### 4. Applying Beeswax to the Lines

Before placing rigging lines on the model, run the line through a block of beeswax several times. Then, run the line through your fingers. This heats the wax slightly and rubs it into the line. The beeswax will cut down on fuzz and protect the line from moisture.

#### 5. Seizing Rigging Lines

Seizing of lines (binding or securing two lines or different parts of the same line) can be done as shown in Figure E-1. To prevent seizings from unraveling, add a touch of CA glue. For seizings, use the smallest line in the kit or sewing thread.



#### 6. Block Strops

A strop is an iron or rope band or grommet around the shell of a block for

attaching lines. The blocks in the kit are fairly small so it is not easy for you to create the exact detailing. Some modeling shortcuts are in order (Figure E-2).

## STAGE F: MAST & SPAR CONSTRUCTION

Most references call a mast a mast, and anything else such as a boom, yard, gaff, and bowsprit a spar. Let's stick with that definition.

There are two mast assemblies for the *Harriet Lane*. They are a foremast & mainmast. Both are built up in two sections. Each of the sections are connected at the doublings (where upper and lower masts overlap) by mast caps and trestletrees. The mast caps are castings in the kit. The trestletrees along with the cross-trees are to be made from wood.

#### 1. Shaping the Masts

**Tapering the Masts and Spars** - Mast and spars are tapered. The best way to taper the masts and spars from dowels is start at maximum diameter and cut or sand the dowel into squares, then by sanding the corners into a round shape (Figure F-1).

#### Shaping the Mastheads & Heels

Generally, most ships have square mastheads and square heels on upper round masts. For this small model, leaving the heads and heels round is suggested to simplify the work. The top of the lower mastheads, however, needs to be square to fit the cast mast cap.

#### 2. Mast Details

**Mainmast** - Add a boom rest near the deck.

**Topmasts** - Both topmasts have two rigging stops where the upper stays and backstays are seized. A rigging stop is simply a shoulder formed by the reduction of the mast diameter going above. The shoulder prevents the lines from sliding down the mast. For this model, the topmasts are small in diameter. To actually cut the shoulders would weaken the mast and it could break. Instead, wrap the mast with thread or paper strip and glue to form a fake shoulder.

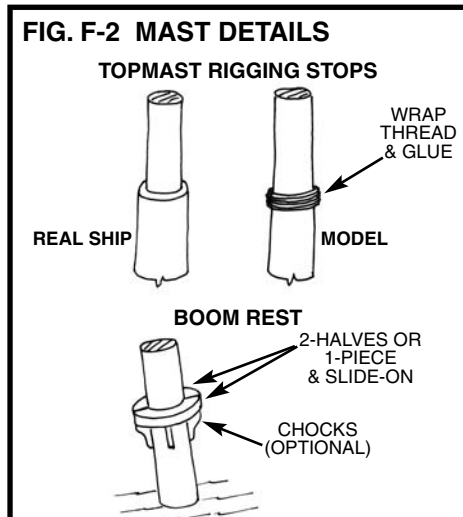
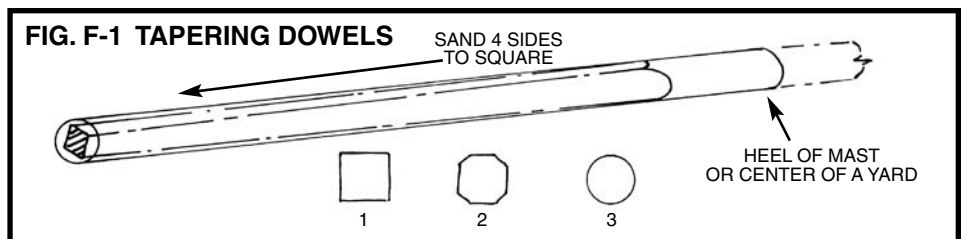


Figure F-2 illustrates the above details.

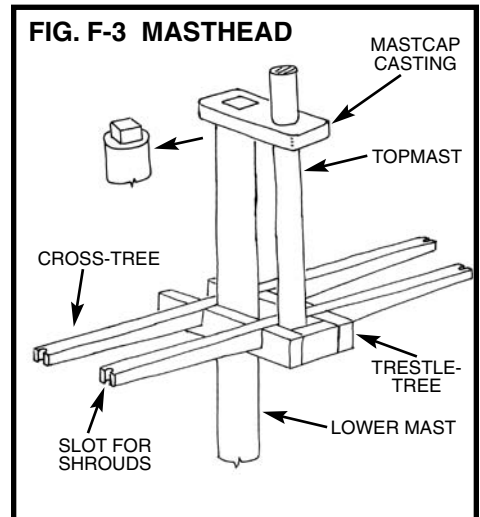
#### 3. Mast Assembly

Make the trestletrees and the cross-trees from stripwood. The mast cap is a casting. Assemble the masts as shown in Figure F-3.

#### 4. Shaping & Detailing the Spars

**Yards** - Shape the yards in the same manner as the masts. The maximum diameter of each yard is at its center. Taper the yards outward from each center. Cut a shoulder on each end of the yards which is a stop for lifts, braces, and footropes.

Jackstays consists of a series of eyebolts thru which a rod or line is passed and



fixed at the ends of the yard. The line and eyebolts are used for attaching the head of a sail and the footrope stirrups. Note that the eyebolts are on top of the yard but slightly forward of the yards centerline.

While you are detailing the yards you might as well add the jackstay lines after the eyebolts are installed. Use either brass wire or line for the jackstays. Figure F-4 illustrates a typical yard. The Figure shows some optional fittings at the center of the yard which would be appropriate for the time period of this ship.

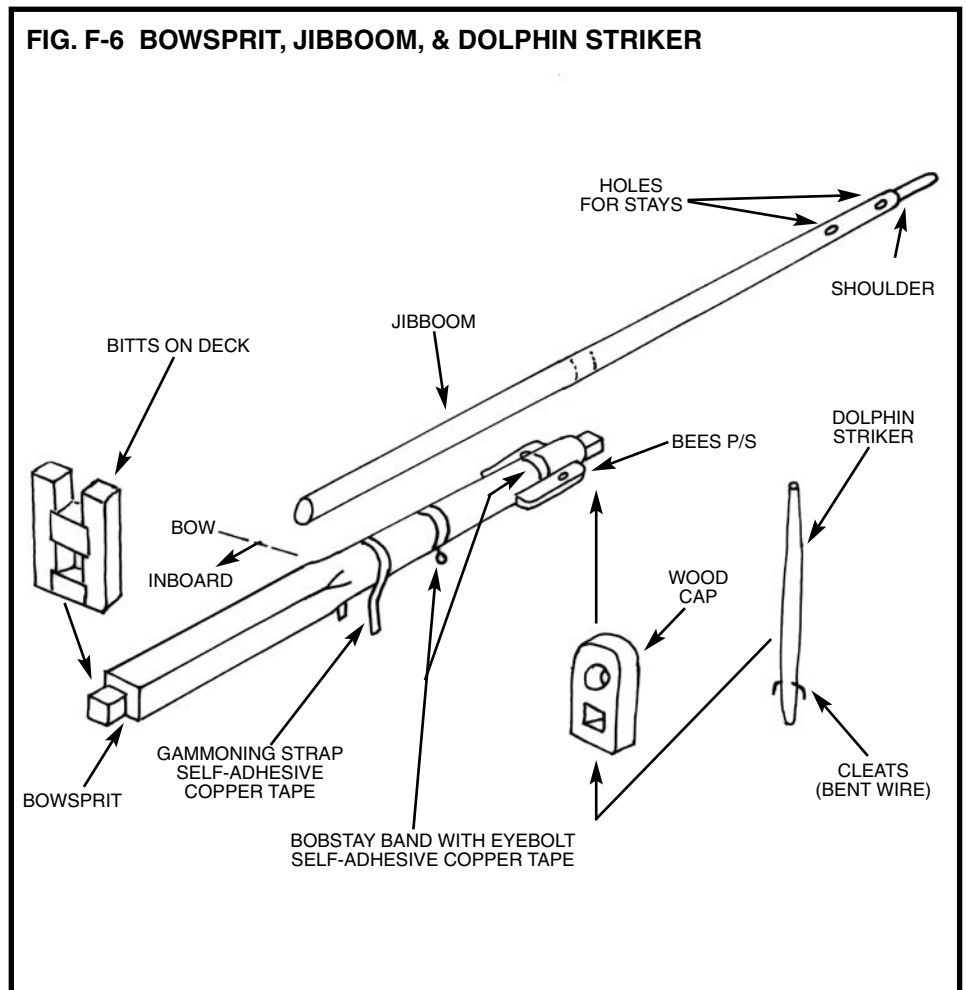
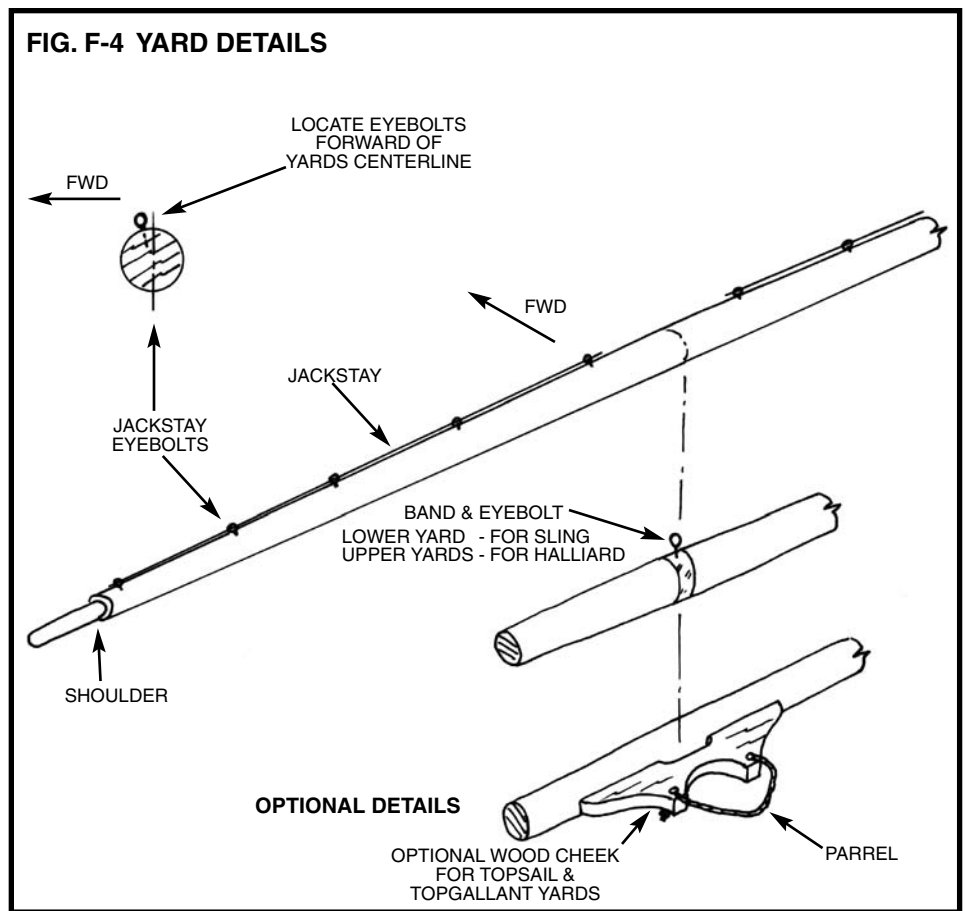
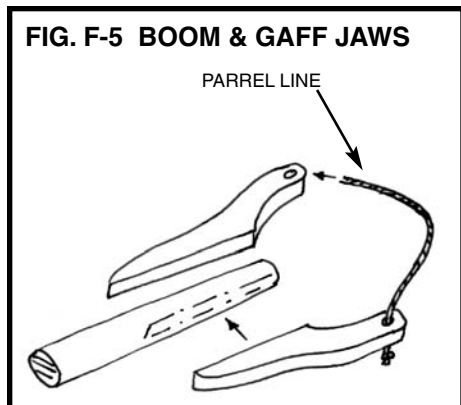
**Boom & Gaffs** - The boom and gaff also taper, but the maximum diameter of each spar should be about one-third from its fore end. Like the yards, cut a shoulder at the outer end of these spars. The boom and gaffs require that jaws be added to their throats for joining to the masts. The jaws are made from wood (Figure F-5).

**Bowsprit, Jibboom, & Dolphin Striker** - The bowsprit is tapered forward from the hull. Inboard, the bowsprit is square so as an option use square wood for the bowsprit instead of the dowel. The dowel could still be used and left round for the entire length. At the outer end, cut a square shape to fit the bowsprit cap to be made from wood. Add the bees for the fore topmast stays. Inboard there is a bitt on each side of the bowsprit heel. Make these from wood. The gammoning strap securing the bowsprit to the stem, and the bands for the bobstays can be made from self adhesive copper tape. Put eyebolts in the bottom of the band for the bobstays.

The jibboom should be straight from the aft end to the bowsprit cap, then tapered forward of the cap. At the outer end cut a shoulder for the jibboom shroud seizings. Drill two holes for the head stays to pass through (sheaves on real ship).

The Dolphin Striker (or martingale) is a simple tapered round spar. At the bottom of the spar add a bent wire cleat for head stays to pass under. Drill a hole in the underside of the bowsprit cap and insert the dolphin striker.

Figure F- 6 illustrates the bowsprit, jibboom, and dolphin striker details.



# STAGE G: STANDING RIGGING

## 1. Shrouds & Backstays

The lower shrouds and backstays are set up with deadeyes and lanyards at the rail and attached along the outside of the ship using chain plates. The lower deadeye strops and chain plates are to be made of wire provided in the kit. Cut a notch in the rail and in the shear strake strip for the chain plates, then add a thin strip over the notches. Figure G-1 illustrates.

For this small scale model, setting up the deadeyes is a difficult task if done properly. A simplified approach is recommended. It is suggested you reeve the lanyards before nailing the chain plates to the hull and before installing the shroud or backstay to establish the correct deadeye spacing. Make a wood jig to hold the deadeyes at the correct spacing and to aid in reeving the lanyards. Install the chainplates on the hull, then install the shrouds and backstays (Figure G-2). The sketch also shows the proper sequence for the shrouds going around the mastheads. The backstays seize to the topmast rigging stops.

**Note:** A commercial jig for spacing deadeyes and reeving lanyards is available from Model Expo ([www.modelexpo-online.com](http://www.modelexpo-online.com))

After the shrouds are in place, proceed to add the ratlines and the sheer poles (wood strip just above the upper deadeyes). On the real ship, ratlines would be seized to the inner shrouds with clove hitches and by eyesplices on the outer shrouds. For this small scale model, simply glue black line or sewing thread to the shrouds and cut off at each end.

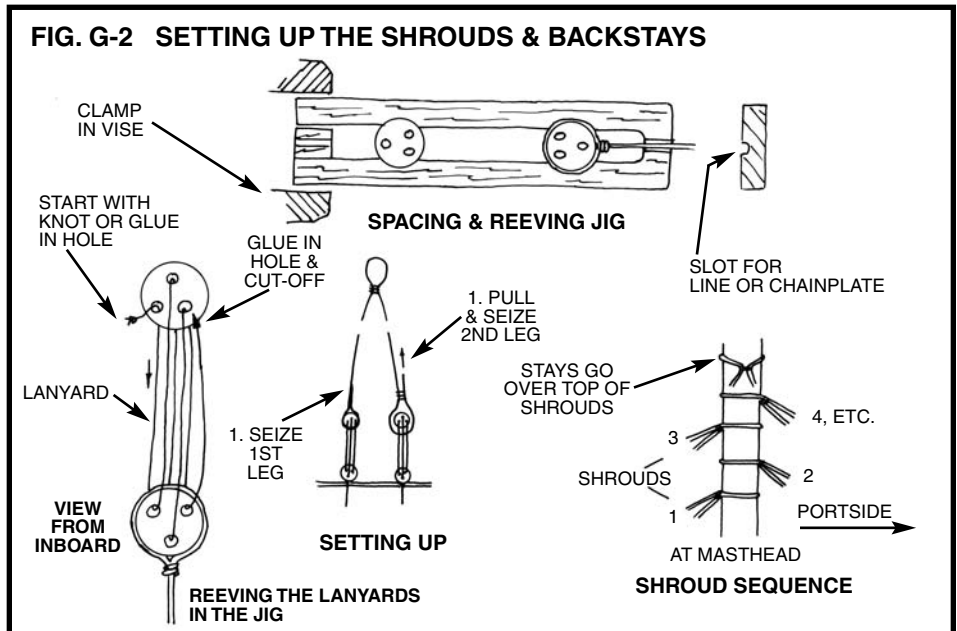
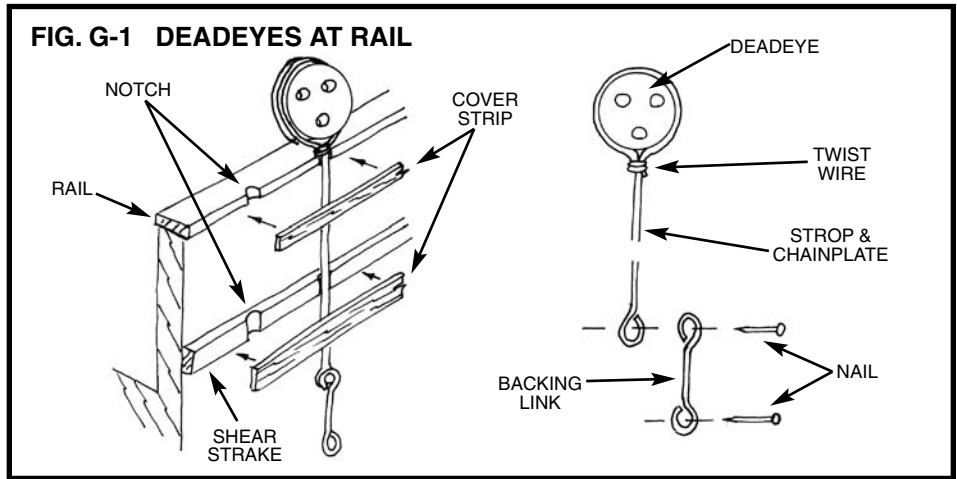
The topmast shrouds are set up similar to the lower shrouds but instead of having chain plates they set up to futtock shrouds at the mast (Figure G-3).

## 2. Foremast (Head) Stays

The name for the stays at the foremast from the lowest to the highest are forestay, fore topmast stay, jib stay, and fore topgallant stay.

**Forestay** - The forestay is a double line wrapping around the masthead. Seize the double line together just below the masthead and just above the bowsprit. Set the lower ends to eyebolts on each side of the bowsprit at the bow. The eyebolt is shown in a detail on Plan Sheet 1.

**Fore Topmast Stay** - This is also a double line. Seize the two lines together just below the lower topmast rigging stop and just above the bowsprit. The ends then pass port and starboard thru the bees on the side of the bowsprit. Though not shown on the plans, the lines should then go to the bow on each side and set up to an eyebolt. Place the eyebolts just a little aft of the stem and just below the cap rail.



**Jib Stay** - The jib stay is a single line. Seize the top around the lower topmast rigging stop (on top of the fore topmast stay). The bottom goes thru a hole in the jibboom, then under the starboard cleat on the dolphin striker, then to an eyebolt on the starboard bulwark under the cathead.

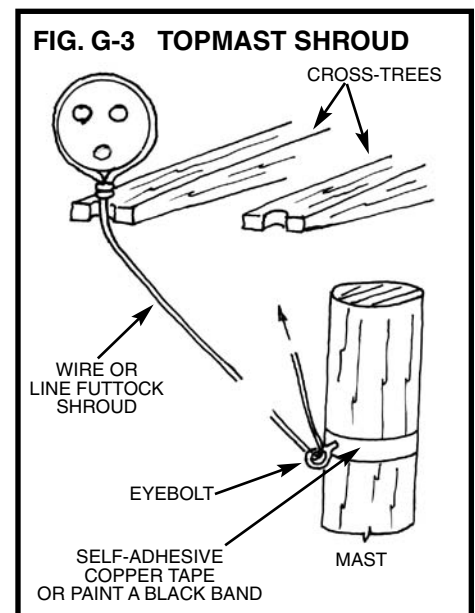
**Fore Topgallant Stay** - This stay is seized around the upper topmast rigging stop, then goes thru a hole in the jibboom, then under the port cleat on the dolphin striker, then to an eyebolt on the port bulwark under the cathead.

**Note** - The part of the two forward stays under the jibboom and the port and starboard ends labeled "A" and "B" on the plans are more properly called martingale stay and martingale backstays respectively.

See Figure G-4 for some head stay details.

## 3. Bowsprit & Jibboom Rigging

**Bowsprit Shrouds** - These are port and starboard. Seize the outer end to an eyebolt in side of the bowsprit cap and the inner



end to eyebolt in the bulwark just forward of the catheads.

**Jibboom Shrouds** - These are port and starboard. Seize the outer end to the shoulder at end of the jibboom and the inner end to eyebolt in the bulwark just forward of the catheads (right next to the bowsprit shroud eyebolt).

**Bobstays** - There are two bobstays, both chain. Secure the ends to eyebolts. In way of the eyebolts add self adhesive copper tape around the bowsprit to represent iron bands and strips at the stem on both sides to represent iron plates.

See Figure G-5 for some bowsprit and jibboom rigging details.

#### 4. Mainmast Stays

The name for the mainmast stays from the lowest to the highest is mainstay, main topmast stay, and main topgallant stay.

**Mainstay** - This stay is unique because of the interference of the ship's funnel. The line is double. Wrap it around the mast head and seize the lines together just below the trestletrees. Spread the double line and seize the ends to an eyebolt in the port and starboard waterway. The eyebolts can be the same eyebolts you installed for the forward funnel chain guys. The plan view on Plan Sheet 1 shows the two together.

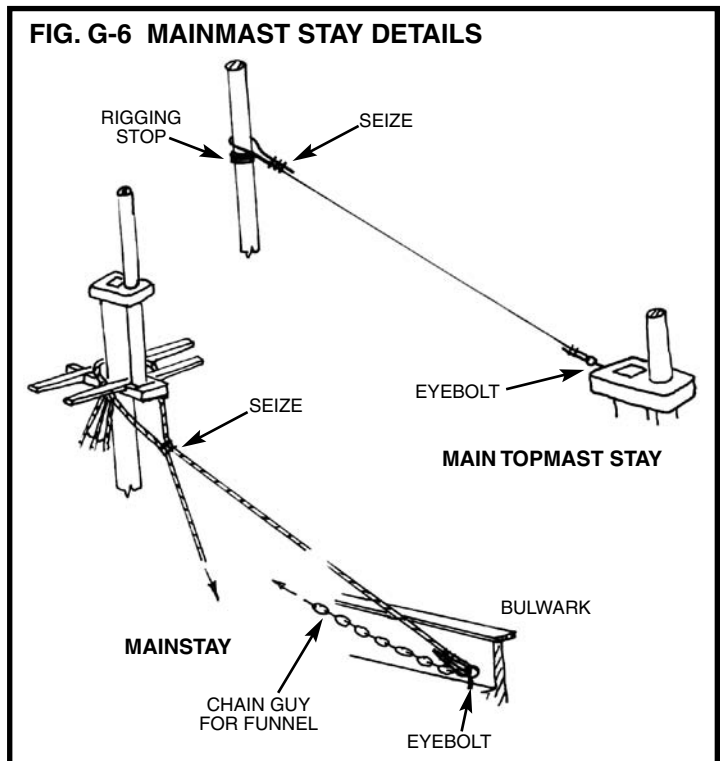
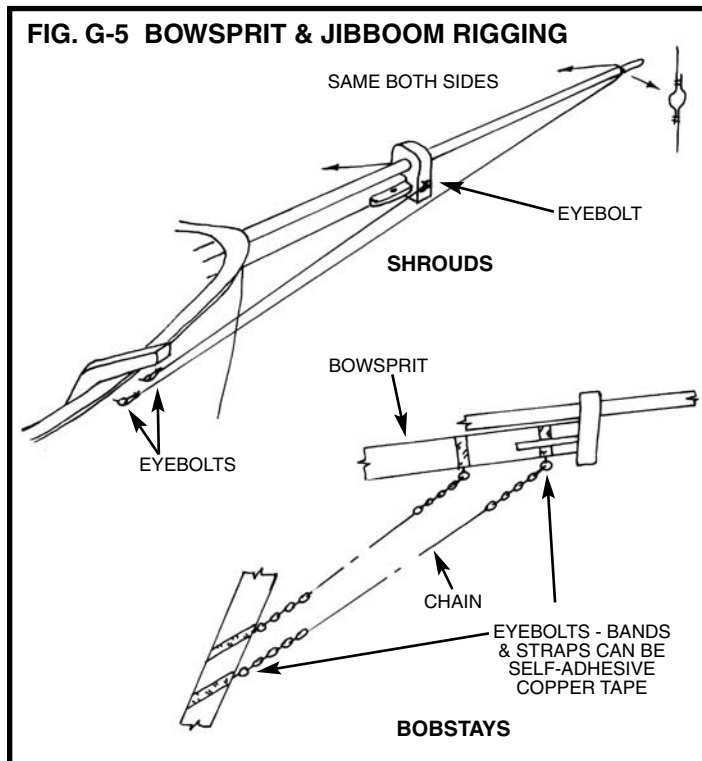
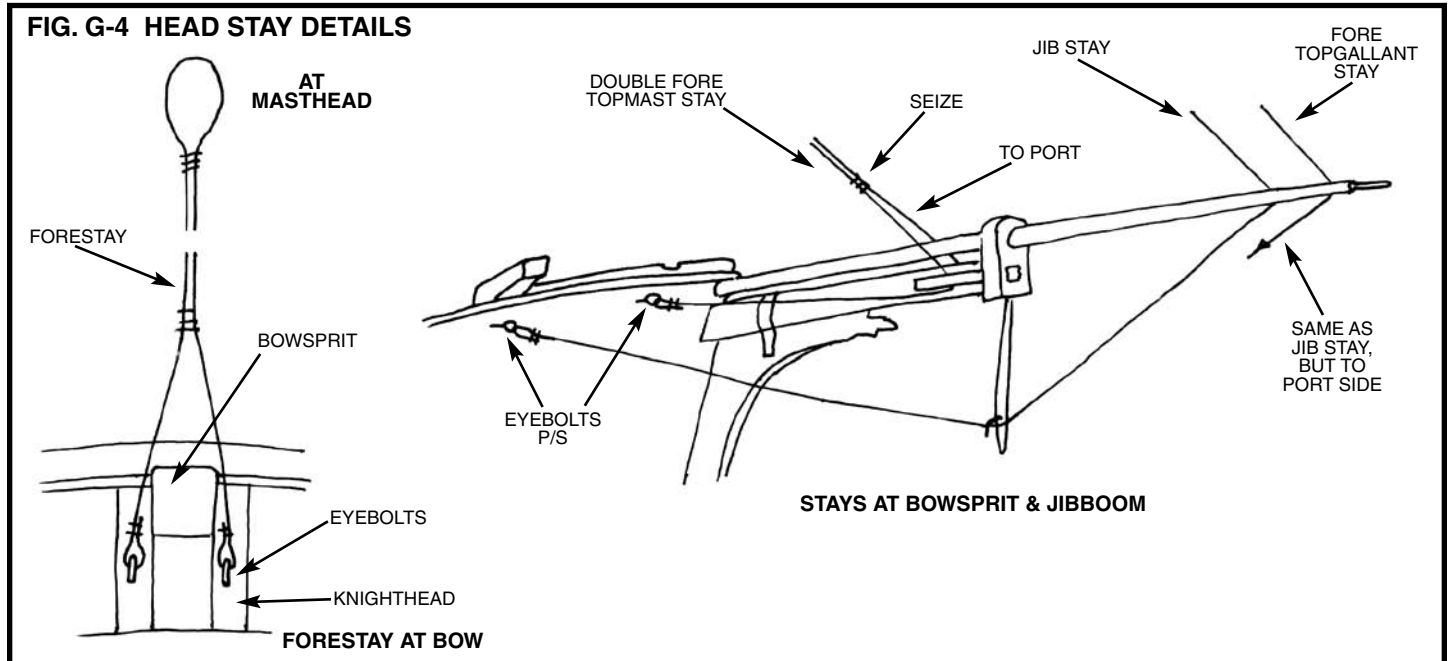
**Main Topmast Stay** - Seize the stay around the lower main topmast rigging stop and set to an eyebolt on the aft side of the foremast cap.

**Main Topgallant Stay** - Seize the stay around the upper main topmast rigging stop and to the lower fore topmast rigging stop.

See Figure G-6 for some mainmast stay details.

#### 5. Standing Rigging on Fore Yards

Both standing rigging and running rigging on the yards will be discussed in Stage H for the sake of combined illustration.



# STAGE H: RUNNING RIGGING

## 1. General Notes

Although the rig is simplified for this small scale model, there are a few rigging items missing or not clearly shown on the plans that are essential and must be added. They are a truss for the lower yard, and parrels and halliards for the topsail and topgallant yards. These additions will be discussed in the following paragraphs along with the rig shown on the plans.

Since the model is to be rigged without sails, the topsail and topgallant yards should be in their lower position, hanging from their lifts. The positions are shown on the Section of Fore Mast on Plan Sheet 2.

## 2. Fore Yard

**Jackstays** - The jackstays were already installed when you detailed the yards in Stage F so no further work is required.

**Footropes & Stirrups** - These are black standing rigging lines. Beeswax the footropes heavily so you can droop them into a natural hanging curve and they will stay in place.

**Sling and Truss** - These are black standing rigging lines. Unlike upper yards that move up and down, the lower yard is basically fixed. It is hung from the masthead by a sling, and held against the yard by a truss.

**Lifts** - These are port and starboard. Install a block at each end of the yard and a block hooked to an eyebolt on each side of the mast cap. The block at the cap will have a becket to which the line is attached. The line runs down and thru the block on the yard, back up and thru the block at the cap and down to the fife rail where it is belayed.

**Braces** - These are port and starboard. Add the brace block at the ends of the yard. Seize the standing end to the top of the mainstay as shown on the plans. Run the line thru the block on the yard, then back through a block seized to the foremost mainmast shroud. The line can be belayed either to a cleat on the inside of the bulwark or to a belaying pin at the rail.

Figure H-1 illustrates the fore yard rigging details.

## 3. Fore Topsail & Topgallant Yards

The jackstays, footropes, & stirrups, are essentially the same as for the lower yards.

**Parrel** - These are black standing rigging lines. The upper yards move up and down. They are held against the mast by a parrel. If you elected to use the wood chocks on the yards, the parrel line is attached to the chocks. The parrel on the sketch without the wood chock looks just like the truss on the sketch for the lower yard. However, on the real ship the part of the line around the mast would have beads or leather covering so the parrel slides freely along the mast.

FIG. H-1 FORE YARD RIGGING

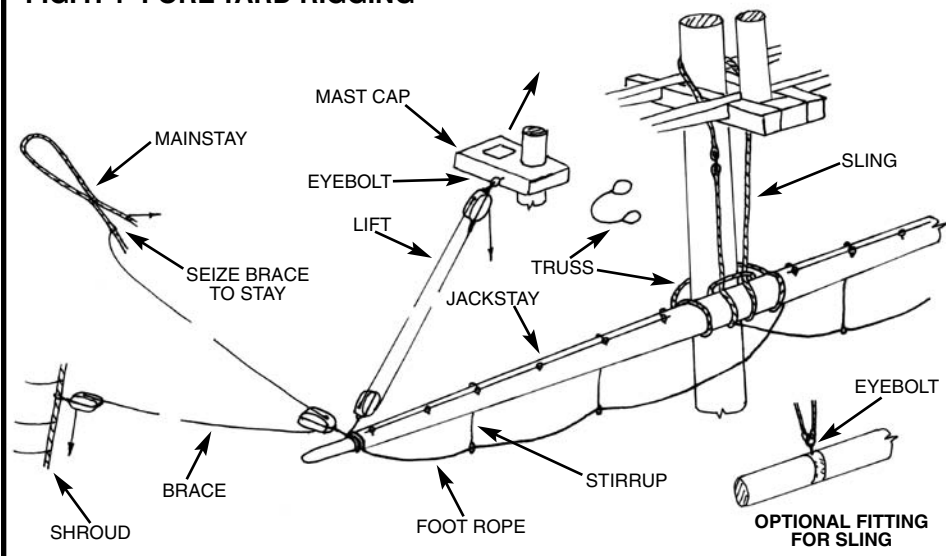
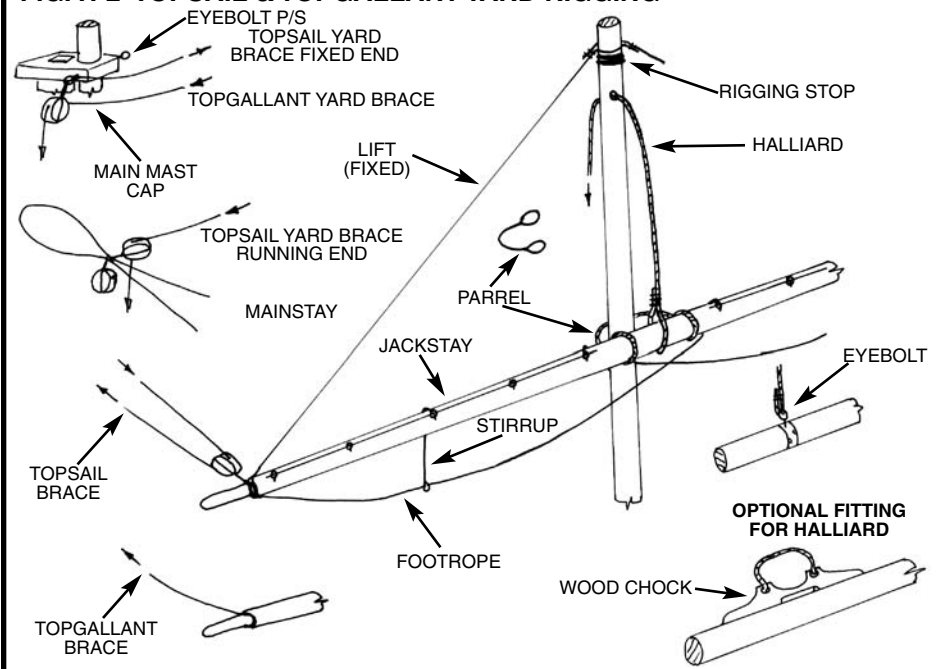


FIG. H-2 TOPSAIL & TOPGALLANT YARD RIGGING



This detail is omitted on this model.

**Halliards** - Typically, the halliard (for lifting the upper yards) is made up of a tye attached to the yard, a runner, and finally a fall which is a tackle at the deck. For this model, the rig is simplified to a single line. Seize the line to the center of the yard.

Above the yard just under the rigging stops, drill a hole in the mast to represent a sheave. Run the halliard thru the hole then down to the fife rail for belaying.

**Lifts** - These are black standing rigging lines and fitted port and starboard. Unlike the movable lifts for the lower yard, these are fixed lines. Seize the line to the end of the yards and at the rigging stops above the yards.

**Topsail Yard Braces** - These are port and starboard. Add the brace blocks at the ends of the topsail yard. Seize the standing ends of the braces to an eyebolt in the forward side of the mainmast cap. Run the line thru the blocks on the yard, then thru blocks seized to the top of the main stay, and down to the fife rail for belaying.

**Topgallant Yard Braces** - These are port and starboard. Seize the braces to the shoulder on the ends of the yard. Run the lines thru blocks seized on each side of the mainmast cap or to the same eyebolt used for the standing ends of the topsail yard braces, then down to the fife rail for belaying.

Figure H-2 illustrates the fore topsail and topgallant yard rigging details.

#### 4. Main Gaff & Boom

Not identified on the plans, the peak halliard is the line fixed to the aft end of the gaff and the throat halliard is at the forward end. Place the gaff onto the mast at the location shown on the mast. Add the parrel across the gaff jaws. To keep the gaff from flopping sideways, you best glue the jaws to the mast. Add a temporary support line to hold the gaff up in position while you rig the halliards.

**Gaff Throat Halliard** - Seize the upper block to the trestletree and the lower block to an eyebolt in the fore end of the gaff. The upper block is a becketed block for attaching the end of the halliard. Reeve the line down to the lower block, up thru the upper block, then down on the starboard side of the gaff to the fife rail for belaying.

**Gaff Peak Halliard** - Seize the blocks to the gaff and around the masthead. Seize the standing end of the halliard to the gaff. As an option the blocks on the mast can be fitted to eyebolts. Reeve the line thru the blocks and then down on the port side of the gaff to the fife rail for belaying.

#### Boom Topping Lift and Boom Sheet -

Much of rig can be secured to the boom before the boom is placed on the model. Set the boom jaws on the mast boom jaw rest and add the parrel. Fix the topping lift to an eyebolt in the aft side of the mast cap. Seize the line around a block just above the boom as shown on the plans. This line should be black. Seize the tackle line to the boom end, run it thru the block, then down thru a hole in the boom. Carry the line forward and belay it to a cleat on the starboard side of the boom. The boom sheet is composed of a becketed block seized to the boom. From the becket run the sheet thru the lower block, back up through block on the boom and belay the sheet to a cleat on the bulwark either port or starboard. Though not shown on the plans, the lower block should be attached to a ring on a traveler rod in the deck.

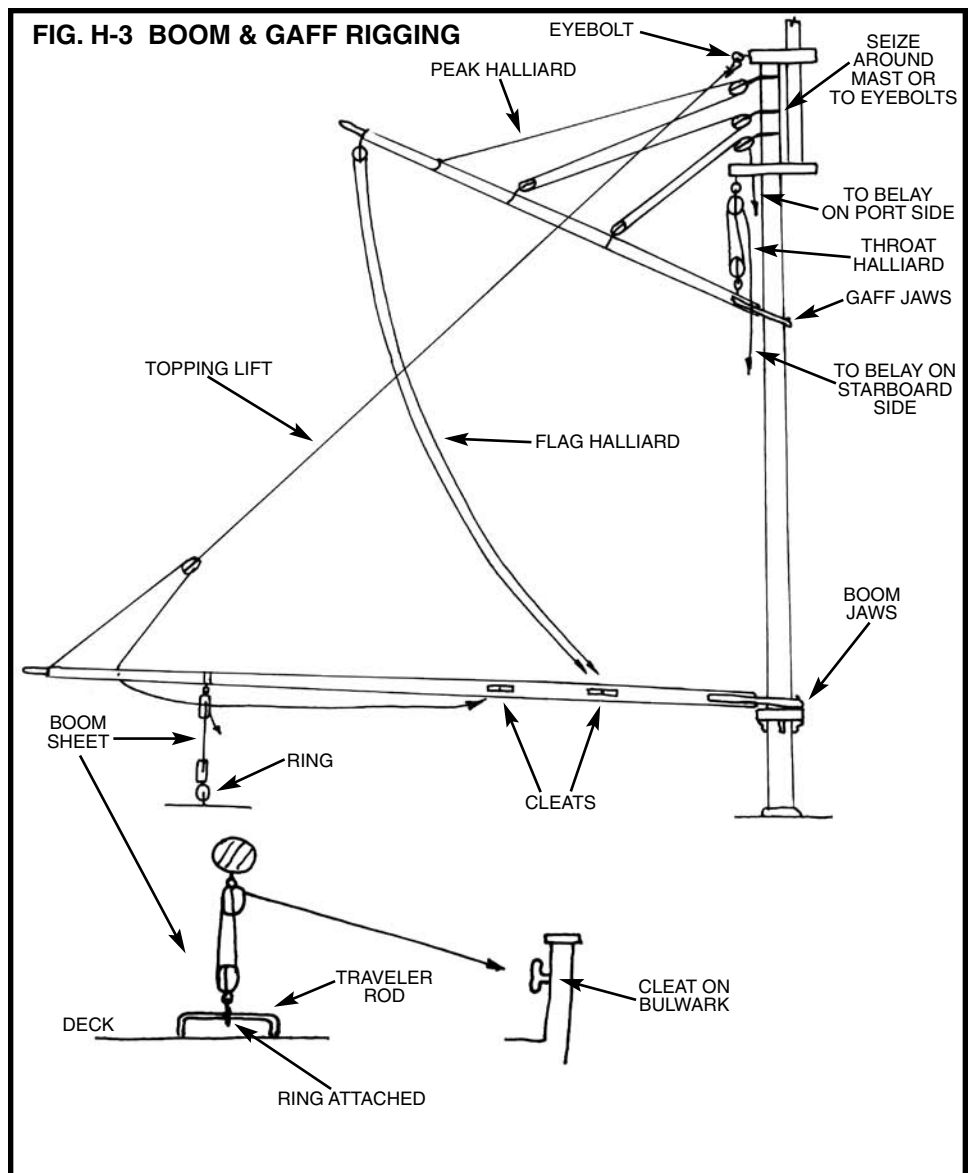
**Flag Halliard** - Add a block on the gaff for the flag halliard. Belay the ends of the line to a cleat on side of the boom.

Figure H-3 provides some details of the boom and gaff rigging.

#### 5. Final Touches

After all the rigging is in place, re-check every line, and make sure all the seizings are sound. If necessary, add another touch of CA glue to seizings. Check to see if there are any shiny places on the rigging. If necessary, tough-up standing rigging with black paint, or black liquid shoe polish. For running rigging, use a tan stain, or brown liquid shoe polish.

Check to see if any of the painted wooden parts were marred or scratched during the rigging process and touch-up as necessary. Congratulations—you've done it! We look forward to helping you with your next ship modeling project.



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Good history with many references to *Harriet Lane* involvement.

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The Ship Model Society of Rhode Island reprinted in a limited edition the section on spars and rigging from *Nautical Routine* published in 1849 by Murphy and Jeffers, past midshipmen, U. S. N. It presents a detailed description of the spars, rigging, sails, and other gear of a full-rigged ship. In addition to his own experience at sea, Murphy consulted the most experienced riggers he could find in order to ensure that the book represented the state of the art in 1849. The result is a treatise of great value and reliability to anyone interested in understanding the rigging of a sailing vessel.

### 3. *The Neophyte Shipmodeller's Jackstay*

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Good detail on hulls and rigging. Great for beginners.

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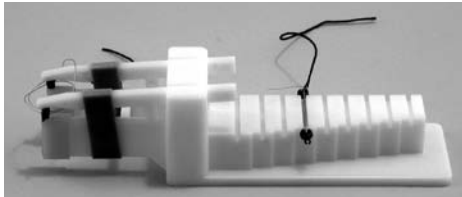
Comprehensive reference covers construction methods for solid hull, plank-on-bulkhead, and plank-on-frame kits. The book is profusely illustrated and includes glossary of nautical terms.

**Note:** Many books are available through Model Expo, Inc. - [www.modelexpo-online.com](http://www.modelexpo-online.com).

Please check current catalog or website for availability.



## Fine Tools & Books from Model Shipways

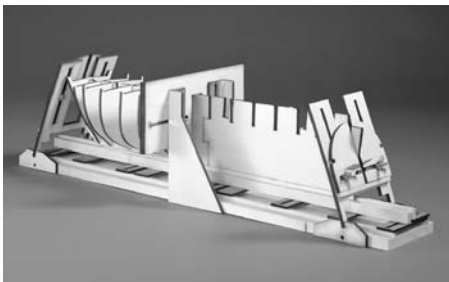


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### HOW TO BUILD FIRST-RATE SHIP MODELS FROM KITS

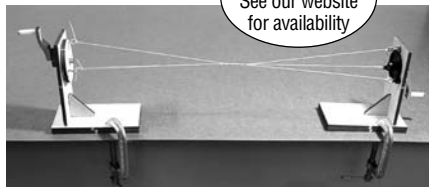
By Ben Lankford. This comprehensive reference discusses how to choose a kit, foreign vs. US kits, materials, tools, hull construction, deck furniture, rigging and masting, finishing and display. Covers hull construction methods for solid hull, plank-on-bulkhead and plank-on-frame kits. Profusely illustrated, the book includes a glossary of nautical terms, tips on advanced research and a list of references for actual ships and ship model techniques. 96 pp, softcover.

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No. MS7205



### HULL PLANKING CLAMPS

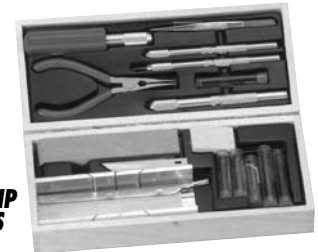
Laser cut plywood planking clamps eliminate unsightly holes in your bulkheads, and hold your planks firmly in place while you glue, drill, measure and taper. Each clamp is 1" square, and includes a metal screw with wing nut and two 1/16" diameter brass support rods. Assembly required.

No. MX103

Set of 6, use with bulkheads less than 3/16" thick.

No. MX104

Set of 6, use with bulkheads 3/16" or thicker.



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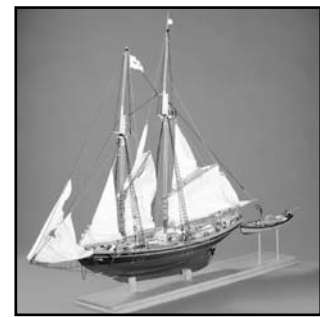
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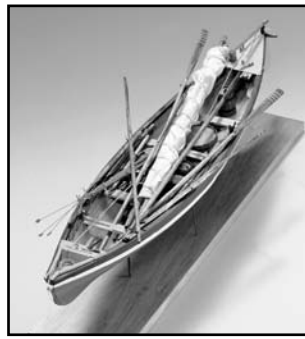
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