

INSTRUCTION MANUAL

MODELING THE GLAD TIDINGS ♦ PINKY SCHOONER, 1768 ♦



MODEL SHIPWAYS
• QUALITY KITS SINCE 1946 •

Technical Characteristics

Scale: 1/2" = 1' (1:24)

Overall Length: 29-1/2" (749.3 mm)

Height from Bottom of Keel: 23" (584.2 mm)

Beam: 5-1/4" (133.4 mm)



Manufactured by Model Shipways, Inc. • Hollywood, Florida
Sold by Model Expo, a division of Model Shipways, Inc.
<http://www.modelexpo-online.com>

Model Shipways Kit No. 2180

HISTORY

The Pinky is one of the oldest types of New England fishing and trading boats. The type was very popular and ruled the New England fisheries during the period 1815-1840 before being superseded by larger and faster fishing boats, namely the famous Gloucester schooners. However, as the Pinky is a sturdy and graceful seagoing boat, it has been brought back as a pleasure craft. Many were built in the late 1900's.

The word Pinky describes a boat with a narrow stern and overhanging false counter. The New England Pinky derives its name from the 15th-16th century Dutch Pink, a term applied to all ships and boats with a narrow stern. The Dutch word Pincke means narrow; hence this type of boat is generally referred to as a pink-sterned craft. The pink-sterned schooners came into use in America during the latter part of the 17th century.

For more history on the craft's development, refer to the bibliography.

Model Shipways developed its Pinky Schooner Glad Tidings kit in 2001-2002. Glad Tidings is a two-masted schooner with a gaff rigged fore and aft mainsail, and single jib. The boat was designed by the famous nautical historian, Howard I. Chapelle, former curator at the Smithsonian Institution in Washington, DC. In fact, the boat was actually built for and sailed by Mr. Chapelle. He was an admirer of the Pinky and its history. The design represents a typical Maine Pinky.

The Glad Tidings was built by Roger I. Sawyer of Milbridge, Maine and launched in 1937. Its length on deck is 39' 0", length on waterline 36' 3", has a beam of 10' 4", and a draft of 6' 0".

The Model Shipways plans are based on Howard I. Chapelle's original drawings of Glad Tidings, used with permission from the Smithsonian's National Museum of American History in Washington, DC. Copies of the original drawings are available by writing to Ship Plans, NMAH-5004/MRC 628, Smithsonian Institution, Washington, DC 20560-0628 USA.

Plans & Instructions by Ben Lankford
Edited by Bob Crane
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Before You Begin

Glad Tidings is an interesting boat and makes a splendid model. The model is well suited for the beginning ship modeler. At 1/2" = 1' 0" scale, it is easy to build and obtain precise detail. Plank-on-bulkhead hull construction with laser-cut parts offers a unique building method. It assures an accurate hull form.

Britannia, brass, and wooden fittings eliminate creating many parts from scratch. However, some require final finishing before they are suitable for the model. This is especially true for the britannia fittings and will be discussed later.

Always complete one construction stage before moving to the next. When things go awry, consider doing them over.

Working with the Plans & Parts

Before starting the model, carefully examine the kit and study the plans. First, determine if all the listed parts are present. Handling them will produce a better understanding of the kit's requirements. Try to visualize how every piece will look on the completed model. Also, determine the building sequence - what must be done first - ahead of time. The instructions will help, but a thorough knowledge of the plans at the outset is essential.

To avoid losing small fittings and hardware, sort them into labeled boxes or compartments. These should have lids to keep out dirt.

1. The Plans

Five plan sheets are provided:

1. Laser-Cut Wood Patterns
2. Hull Construction
3. Hull Profile & Deck Plan
4. Hull & Spar Details
5. Rigging & Sail Plan

One supplemental sheet is provided which shows the shapes of the individual hull planks as spiled and fitted for the prototype model. More about this later.

Model Shipways' *Glad Tidings* kit is manufactured to a scale of 1/2" = 1' 0" (1:24). Each sheet is drawn to that scale except areas enlarged to show detail. A scale of 2X noted on the plans is twice scale, or 1" = 1' 0". Most dimensions can be lifted directly off the plans by using draftsman dividers or a "tick" strip (piece of paper such as an adding machine roll). Lay the paper strip over the plan, carefully mark the item's length with a sharp pencil, then transfer the marks to the wood.

Because these are model building plans, actual measurements are given in model inches. For comparison, 1/32" on the model is equal to 3/4" on the real boat, 1/16" is 1.5", 1/8" is 3", 1/4" is 6" and so on. The

table below compares full-size dimensions with scale model inches and millimeters:

Full Size Inches	Model Scale Inches	Model Scale Millimeters
3/8"	1/64"	0.40mm
3/4"	1/32"	0.79mm
1-1/8"	3/64"	1.19mm
1-1/2"	1/16"	1.59mm
2-1/4"	3/32"	2.38mm
3"	1/8"	3.18mm
6"	1/4"	6.35mm
9"	3/8"	9.53mm
12"	1/2"	12.7mm

2. Making Allowances Along the Way

Try to be exact when following the plans, but use common sense. Adjustments may be necessary to compensate for small differences in how your model is shaping up; i.e., perhaps the mast has too much rake (the angle at which it sits). Lines should not drape over fittings or conflict with other lines when belayed (secured). Put yourself on the boat, imagine performing the task, and use logic.

3. Understanding Hull Lines

Beginners may not be familiar with the following hull lines. Buttock lines are vertical longitudinal planes cutting through the hull. Waterlines are horizontal planes, and Sections are transverse vertical planes. Diagonals are planes cut almost perpendicular to the station lines. These lines define the hull's shape and are used by the draftsman to fair it (create smooth curves).

A complete set of hull lines is not needed for this model, because laser-cut bulkheads and the center keel define the hull's shape. The planking layout on Plan Sheet 2 shows the station lines. They are the same as the boat's body plan or sections, and illustrate how the hull curves from top to bottom.

4. Kit Lumber

Strips and sheets of basswood are supplied in the kit. Model Shipways occasionally substitutes lime (*Tilia vulgaris*), a European wood, for basswood (*Tilia americana*) in its kits. Both have a fine, uniform texture and straight grain. Lime is often called basswood in Europe.

Sorting the wood in the kit by thickness and wood-type will save time. After selecting and cutting what you need, return the remaining stock to the proper thickness and wood-type pile. Don't worry about using a piece for one item intended for another. Model Shipways supplies enough extra wood to complete the model before running out.

5. Britannia Metal Fittings

These fittings will require final finishing before mounting on the model. First, remove mold joint flash with a #11 hobby blade, then

file or sand with fine sandpaper. Second, wash fittings in dishwashing liquid and warm water to remove traces of mold release agent and the body oils your fingers deposit. Allow the parts to dry thoroughly before applying primer and painting.

6. Soldering & Working with Brass

Here are some tips for working with brass.

Cut brass sheets and strips with a small pair of tin snips or heavy scissors. Thicker brass will require a jeweler's saw. After cutting, smooth the edges with needle files followed by wet-or-dry fine sandpaper used dry. Cutting slivers from brass sheet curls and bends it sideways. To straighten, grip the ends with a pair of small pliers and pull in opposite directions. Thin brass sheets can be scored with a utility knife and metal straightedge and then snapped off. Use two or three light passes, cutting against a maple chopping block, birch board, or glass.

Drilling holes in brass with a pin vise is a slow process. The solution is to mount a hand piece for flex-shaft machines in a drill press or use a small hobby drill press. Several companies manufacture these tools and they are worth the cost. When working with brass, use a 1/4" or thicker piece of maple or birch for backing. (Avoid softwoods, as these flare the exit hole.) To prevent the bit from wandering, mark the spot with a small center punch. Lubricate the bit with light oil and drill slowly to avoid breakage. The brass will become hot, so clamp the pieces to the drill press table or hold them down with a wooden stick. Do not touch the brass! If possible, keep the RPM below 2000. Anything higher will generate enough heat to break small drill bits.

In the past, many modelers used pure silver solder to avoid the corrosive qualities of lead in soft solder. Today, most solders are lead free. They're composed of tin and antimony, or tin and a small amount of silver (3 to 4%). These solders are strong and melt at approximately 430° F. Consequently, no reason exists to use pure silver solder (melts at 1300° F).

The key to soldering is keeping the brass clean. Use a solvent made especially for cleaning metal parts or a simple substitute such as vinegar, lightly sand, or both. Rinse parts in clean water that have been cleaned with a solvent. Once the parts are cleaned, don't touch them. Your fingers will leave greasy spots. Soldering is easy if your work is set up properly. First, immobilize the parts in a fixture or other holding device, then add just enough rosin or acid paste flux to the joint to do the job. Solder flows where flux is applied. Next, heat the joint with a small torch or pencil soldering iron. This sequence is important. The larger the parts, the longer it takes to heat the brass and melt the solder. Remove excess solder with needle files. Better yet, use a desoldering syphon or braid to remove globs of solder before it hardens. The joint should look like the real thing, not a big glob of fillets.

What You'll Need To Start

The following items are recommended for building the model. Those who have modeled before may have their favorites.

A. Knives and saws

1. Hobby knife with #11 blades
2. Razor saw or jeweler's saw

B. Files

Set of needle files; steel or diamond coated

C. Clamps

1. A few small C-clamps
2. Wooden spring-type clothespins (craft shops have small versions)
3. Rubber bands

D. Tool Set

Small carving tool set or individual gouges and chisels for carving keel rabbets, and tapering the stem, sternpost, and rudder.

E. Sharpening Stone

Keeps tools razor sharp.

F. Boring Tools

1. Miniature bits sizes #60 to #80
2. 1/16", 3/32", 1/8", and 3/16" bits
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. Small bench vise
6. Soldering iron or torch
 - a. solder
 - b. flux
7. Beeswax block (for treating rigging lines)
8. Masking tape
9. Wire cutters (for cutting fine wire and strip metal)

H. Sandpaper

1. Fine and medium grit garnet or #100 to #220 aluminum oxide
2. #400 wet-dry sandpaper

I. Sail cloth

Light weave cotton or linen cloth if sails are desired. For furled sails, a light material such as Silkspan is ideal. Model Expo sells a suitable cotton cloth and Silkspan.

J. Finishing

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

K. Supplies:

1. Paints
2. Primer
3. Stains and varnish
4. White or woodworker's (yellow) glue
5. Cyanoacrylates (generic name is Super Glue)
6. Five-minute epoxy
7. Wood filler

Note: White or woodworker's glue in yellow or tan will suffice for most of the model. Five-minute epoxy provides extra strength for affixing fittings. Super glues, such as Jet, Flash, or Zap, produce quick adhesion. For most applications, the medium viscosity, gap-filling variety is best. The thin type is recommended for filling a narrow crack or tacking hull planking to the bulkheads.

Painting and Staining

Beginning this manual with directions on applying finishes may seem strange. Not so! Much time and effort can be saved and more professional results obtained if the finishing process is carried on throughout construction. Proper timing in applying finishes and using masking tape to define painted edges should eliminate unsightly glue marks and splotchy, stained surfaces. Take advantage of these general suggestions:

1. Preliminaries

Sanding and cleaning: Rub down external surfaces with 220 grit sandpaper and then wipe off every speck of dust. Give surfaces to be painted two light coats of primer and sand lightly after the last application. Don't sand down to bare wood. After washing your hands, gently dust the hull with a soft brush and clean, soft cloth or tack rag. Use a spackling compound, such as Model Magic or DAP, to fill any scratches and defects, then sand and prime again.

Choosing paint: Glossy surfaces are not desirable on ship models. A flat finish or one with a slight sheen is best, because it doesn't reflect daylight or artificial lights. Consequently, details show up better. However, the undercoat or primer should be dead flat. A primer gives the surface a little tooth and helps top coats adhere better.

Any of the hobby paints are satisfactory such as Model Shipways, Testors, Humbrol, and Tamiya. Jo Sonja artists' paints (used by bird carvers) are also acceptable. They are a combination acrylic-gouache and dry dead flat.

Hobby paints have a variety of reflectance levels from flat to gloss. When using a mixed group of reflectance levels, finish the completed model with a flat, clear coat. It also provides durability and seals any decals or dry transfer lettering.

Brush painting: Painting with fine, soft bristle brushes is probably best for the beginner. Many skilled model makers prefer the brushed-on technique, because its subtle imperfections impart a more lifelike appearance to the model. Brushes must be soft and of the highest quality. Artist grade sable or synthetics are the best. Use wider brushes for painting broad surfaces. If too narrow, the bristles will cause excessive streaking.

When applying paint or stain with a brush, lay down one thin coat in a single stroke, then move to an adjacent area and coat it

with a single stroke. Never go back over fresh paint. That will tear up the surface. Wait until it has dried to a hard finish before applying a second coat.

Spray painting: Although slightly expensive, a Paasche, Badger, Testors, Revell-Monogram, or similar airbrush will produce a first-rate job and is worth the investment.

Airbrushes are either single action (trigger controls only airflow) or double action (trigger controls air and paint) and easy to use. Spray patterns can vary from thin to about 1/2" wide by either adjusting the needle or installing a different sized nozzle. In some brands, paint travels through the airbrush body to the needle. These require disassembling to clean. Other designs bypass the body and bring paint directly to the nozzle. These clean by simply spraying solvent through them.

Paints are either water (acrylic) or solvent based. Solvent-based paints spray best.

Acrylics are difficult to spray and must definitely be used with the manufacturer's special thinner. Thinning water-based paints with water creates surface tension problems, resulting in poor coverage and spray atomization. If a manufacturer's thinner is not available, alcohol can be used as a substitute. Experiment when using acrylics. Some modelers have success and others don't.

When using solvent-based paints, work outdoors or equip your shop with a spray booth. These fumes are toxic.

Many brands of aerosol paints produce good results. However, test them on scrap wood before spraying the model. Aerosols put out a lot more paint than an airbrush, so be careful to avoid runs. Spray on several light coats.

Most paint manufacturers have special thinners for their various paint lines. Follow each manufacturer's recommendations. Mixing brands is not a good idea, because they may not be compatible. Sometimes, however, no other option exists. If so, apply each brand separately and allow to thoroughly dry before adding the next. Always test to make sure the final flat or gloss finish is compatible with the paint it will cover.

Masking surfaces: Masking can be a tricky process. Some brands of masking tape are worthless, because they allow paint to seep underneath their edges. For masking fine stripes or straight and curved lines, use a graphic arts tape such as Chart Pak. It comes in widths as fine as 1/64". Chart Pak tapes have superb adhesion and won't bleed when firmly applied (burnishing is recommended). Black plastic electrician's tape and Scotch Removable Magic Tape are also excellent. Scotch's tape has the same, low stick adhesive as its famous Post-It pads. In fact, Post-It tape flags can be used for masking.

2. Glad Tidings Color Scheme

The color scheme is shown on the plans for

the various parts and areas. The colors for the major areas are noted on Mr. Chapelle's original drawings. However, a couple of options is noted on the plans; primarily, the substitution of white for yellow in a few areas. Speaking of yellow, Mr. Chapelle simply noted yellow on his plan. This is assumed to be a medium bright yellow. However, a more subdued yellow such as yellow ochre could have been used. The specific yellow color is unknown. In any case, whatever yellow you select, stick with that color throughout for the hull, bulwarks, and bowsprit.

The following Model Shipways acrylic paints match the colors noted on the plans:

- Black - Hull/Spar Black, MS4830
- White - White, MS4831
- Medium Bright Yellow - Bright Yellow Trim, MS4809
- Yellow Ochre option - Hull Yellow Ochre, MS4829
- Gray - Deck Medium Gray, MS4826 or Deck Light Gray, MS4825
- Copper Red - Hull Bottom Copper Red, MS4814

For the natural deck planking and masts, you should use a stain. Basswood is too light to represent a real boat if just clear is used. Model Shipways bottled Minwax Stain, is suggested; Colonial Pine, MS4976. English Oak, MS4975, would also be suitable.

STAGE 1: FRAMING THE PLANK-ON-BULKHEAD HULL

Before getting started on this project, a few important terms and abbreviations are in order, especially if you are a beginner.

Port or (P) - Looking forward, this is the left side of the boat.

Starboard or (S) - Looking forward, this is the right side of the boat.

P/S - A designation you will see on plans and in instructions. This tells you that the same identical part, rig, or whatever, appears on both sides of the boat in the same location.

Model Shipways profile plans are drawn showing the starboard side of the boat. In this case, the bow is pointing to the right. This is common practice for model plans as well as real boat plans although for some unknown reason, Mr. Chapelle's original plans in the Smithsonian were drawn showing the port side which was not his usual procedure.

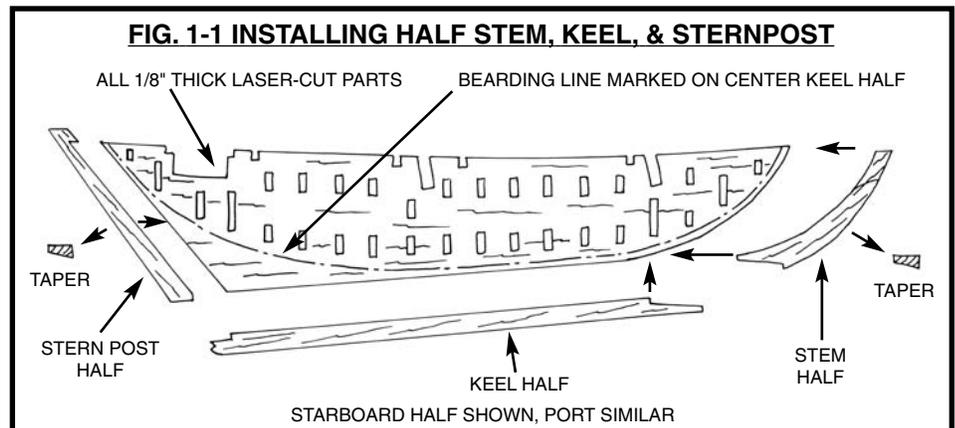
Some of the other stages will have specific terms defined to help you understand the terms used on plans and in the instructions.

1. General

For this particular model, the center keel, stem, keel, and sternpost are 1/4" thick. Since Model Shipways laser cutting machines are limited to 3/16", two 1/8" pieces must be glued together to form the 1/4" thick pieces. Since this is necessary, the basic construction procedure from previous Model Shipways kits has been modified. Half laser-cut bulkheads are provided instead of the usual full bulkheads. Each half of the hull can be assembled flat on a building board. Bulkhead halves with tabs are installed in slots in the center keel. The half hulls can even be planked before the two halves are glued together. This procedure should simplify the construction and ensure that both sides of the hull are identical as each half bulkhead is duplicated by the computer from one pattern drawing.

2. Preparing the Half Center Keels

The two half center keels are laser-cut from 1/8" basswood. With a sharp pencil, draw the bearding line shown on the profile view on Plan Sheet 2. Mark on the outer side of



each half center keel. Be critical and measure from several points on the plans when marking the lines. Model expo has conveniently laser etched the bearding line on the two center keels, one port and one starboard. This eliminates the need for you to transfer the bearding line from the plans to the center keels. A nice touch.

3. Installing the Half Stem, Keel, & Sternpost

The half stem, keel, and sternpost are laser-cut from 1/8" basswood. Glue them to each of the center keel halves. Taper the half stem, and sternpost, and portions of the keel halves as shown on the plans. Tapering of these parts can be done prior to gluing to the center keel. Another option, taper the parts after the two half hulls are glued together; your choice (Figure 1-1).

4. Cutting the Rabbet

The rabbet is a generic term referring to the entire groove where planks are fitted along the stem, keel, and sternpost. The rabbet consists of three basic lines. A rabbet line that happens to be the glue line between the stem, keel, and sternpost and the center keel on the model. It is the line where the outer face of the planks butts with the keel, stem, and sternpost. The bearding line is the intersection of the center keel with the planks inner face. A third line, called the middle line, is where the edge or end of a planks inner surface butts in the rabbet groove.

These three lines are illustrated in *Detail 2-J on Plan Sheet 2*.

Note: As shown in the detail, the rabbet shape varies depending upon its location along the hull. Cut the depth of the rabbet (rabbet line to middle line) to suit the thickness of the planking (1/16"). Do this with a #11 hobby blade. Using a 1/8" or 1/4" wide flat chisel, finish the "V" groove rabbet, cutting from the bearding line to the middle line. At the lower waterlines at stem and sternpost, the middle line of the rabbet almost disappears because of the angle the plank takes. So, in these areas you can just about forget the middle line and chisel the rabbet from the bearding line to the rabbet line. Cut the rabbet on both halves of the center keel.

When cutting the rabbet, temporarily insert the half bulkheads in the center keel slots to determine the angle the planks will take when installed. As you carve the rabbet, fit a scrap piece of 1/16" plank stock against the keel, stem, and sternpost to make sure it fits in the rabbet (Figure 1-2).

Note: Cutting the rabbet may seem difficult at first, but the groove need not be that precise. The accuracy of the middle line is really not that important on a model. The objective is to have the plank edge come out on the rabbet line.

5. Installing the Half Bulkheads

The bulkhead halves are laser-cut from 3/16" basswood. The bulkheads are labeled 1 through 19. Test each one to make sure it slides into the correct center keel tab slots. If the fit is too tight, sand or file the slot. Bulkheads should fit snugly.

Beveling the bulkhead sides: Bevels must be cut on the edges of the laser-cut bulkheads so the planks will contact the entire bulkhead thickness. The bevels are shown on the bulkhead patterns on Plan Sheet 1 except where they are so slight they can't be drawn. Use a tick strip to transfer the side bevels to the bulkheads. Mark them in pencil. Cut the bevels with a #11 hobby blade per Figure 1-3. Side bevels amidships are hardly measurable as noted on the plans. These can be sanded in after the bulkheads are installed while fairing the bulkheads. The deck bevels will be sanded in after the hull halves are glued together.

Note: When cutting the bevels make sure you cut the bevel on the correct side of each of the bulkhead halves. A mistake could easily be made here. Did you ever make a picture frame and cut the corner miter on one piece in the wrong direction?

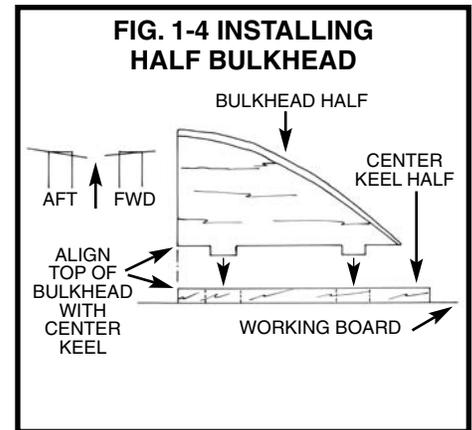
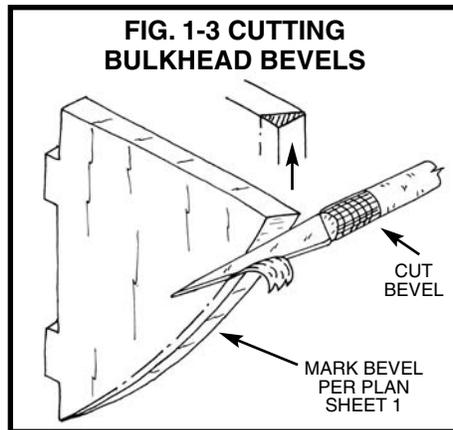
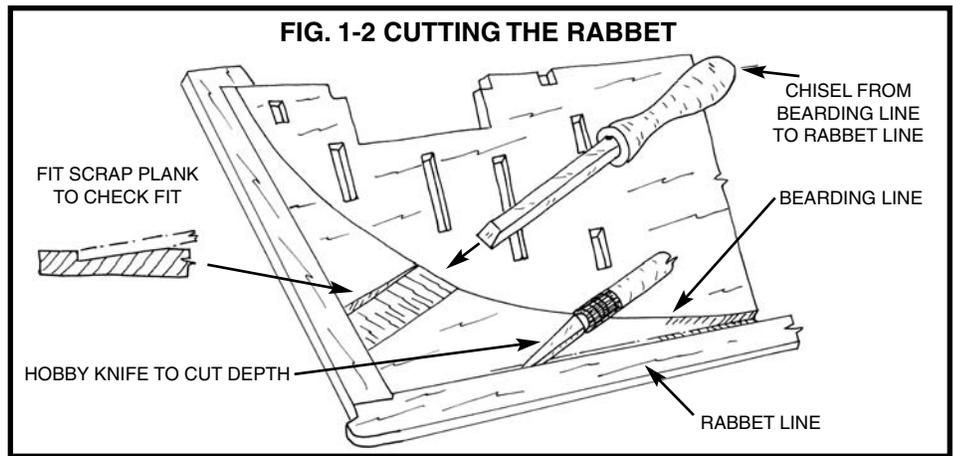
Adding the bulkheads: With the rabbet cut into each center keel half and the bevels cut on each of the bulkhead halves, it is now time to start assembling each half of the hull.

Pin each center keel assembly on a flat building board or table. Just a suggestion, pin the starboard center keel half on your left (bow pointing to right), and the port keel on your right (bow pointing left). Place some waxed paper under the two center keel halves just in case some glue gets slopped onto the board.

Fit each bulkhead half in the slots in the center keel. Notice that the slots are longer than the tabs on the bulkhead halves. The slots are simply to align the bulkheads fore and aft. Fit the bulkhead halves in the slots and adjust the location so the top of each bulkhead is flush with the top of the center keel half. Actually, since the center keel has deck sheer you need to have the forward side of the forward bulkheads flush and the aft side of the aft bulkheads flush with the center keel. The difference here is the bevel that will need to be sanded in the top of the bulkheads later (Figure 1-4).

Start each bulkhead forward and work aft. Use a square to align the bulkhead half vertically and then glue the bulkhead in place. Super glue is ideal for this job since capillary action will take the glue into the joint.

Next, glue a permanent strut (1/8" square or greater) between the bulkhead halves near the outer edge, but make sure the spacing between the bulkheads is accurate. The struts maintain the correct spacing of bulkheads and adds strength to the assembly. The bulkheads have the wood grain running vertical-



ly, so they could easily be bent or broken (Figure 1-5).

The bottom edge of each bulkhead half should line up on the bearding line you marked on the center keel halves but some slight trimming may be necessary. Bottoms on most narrow bulkheads may be slightly above the bearding line caused by laser burning the narrow wood (Figure 1-6).

Fairing the bulkhead sides: Now we come to the most important part of the hull framing. Beginners tend to rush this step and jump right into planking. Take your time and check the fairness thoroughly. Then you won't run into problems when you start planking.

Lay a 1/8" thick square basswood batten against the bulkhead edges at various locations to check the hull's fairness. This process will show you where you need to sand in bevels that were not pre-cut on the bulkhead edges, and where bumps and dips may need to be corrected. Because of the Glad Tidings numerous bulkheads, manufacturing or assembly errors can occur. Sand or add shims as necessary to correct bumps and dips. This is an important check. Hull planks must lie flat against the bulkheads (Figure 1-7).

Procedure option: As noted earlier, you can plank each hull half at this time, or go ahead and glue the two halves of the hull together before planking. In any case, planking will be discussed in Stage 2. For now, let's proceed with the assembly of the hull halves.

6. Gluing the Half Hulls Together

Fit the two half hulls together and pin or clamp them before gluing. Make sure the alignment is perfect with the beam slots, mast slots, cockpit cutout, stem, keel, and sternpost in line. Using a straight edge, make sure the center keel halves are straight. You don't want a banana hull. When satisfied with the alignment, run a bead of super glue around the joints. To further glue the center keel halves together, stick some pin holes through one of the center keel halves and squirt some thin super glue into the pin holes. Capillary action will spread the glue between the center keel halves (Figure 1-8).

The above is just one method for gluing the center keel halves. You can always use woodworkers glue but you will need to be more careful and get the hulls aligned quickly before the glue sets. A few alignment dowels could also be used through the center keel halves.

Completing the bulkhead bevels: You should already have the hull sides fair. With the two half hulls together, now is the time to bevel the tops of the bulkheads. Sand the top of the bulkheads as necessary to follow the sheer of the center keel. As with the hull sides, place a batten on top of the bulkheads to help the fairing

7. Installing Deck Beams and Carlings

Laser-cut transverse deck beams of 1/8" basswood and 1/8" x 3/16" stripwood carlings are installed to support and locate the edges of the cabins, and to form the sides and ends of the cockpit. Fit the beams and carlings flush with the top of the bulkheads. Since all the beams are laser-cut the same length, cut each to the length as required. Always mark the centerline of the beam first, then cut off each end equally. Glue the carlings in place first, then fit the beams. The beams fit into pre-cut notches in the center keel (*Figure 1-9*).

8. Forming the Mast Mortise

The pre-cut mast slots in the center keel form a 1/4" square mortise for the tenon to be cut in the bottom of each mast. The foremost slot is in way of bulkhead 4 so does not need any side support. However, the mainmast slot does not have a bulkhead in way of the slot so it is necessary to fit a 1/8" (or thicker) piece on each side of the center keel to form the sides of the mortise (*Figure 1-10*).

Note: Don't forget this step. You can't get to it after the deck is planked.

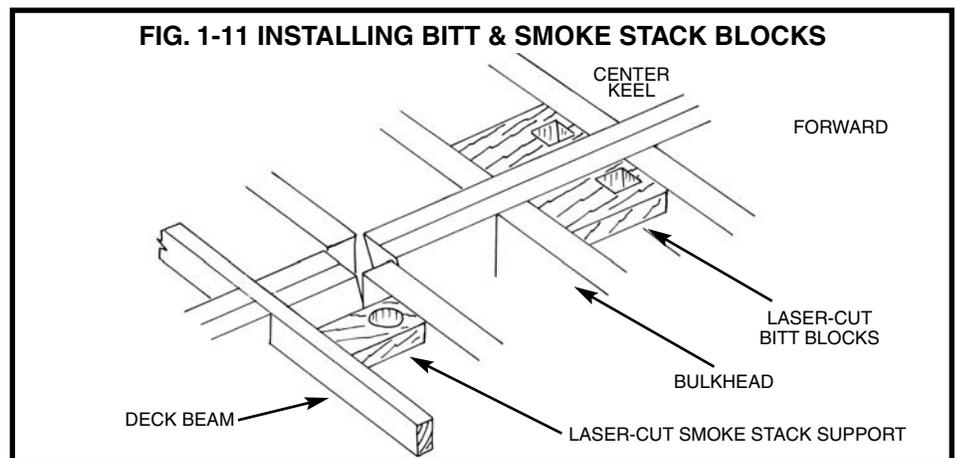
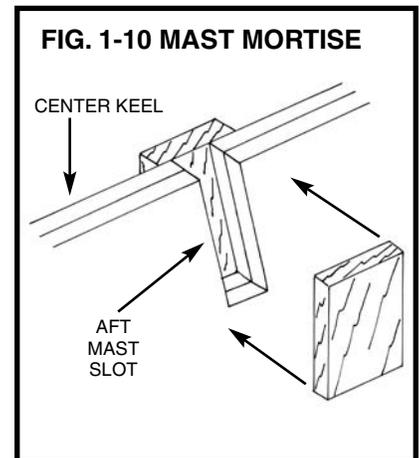
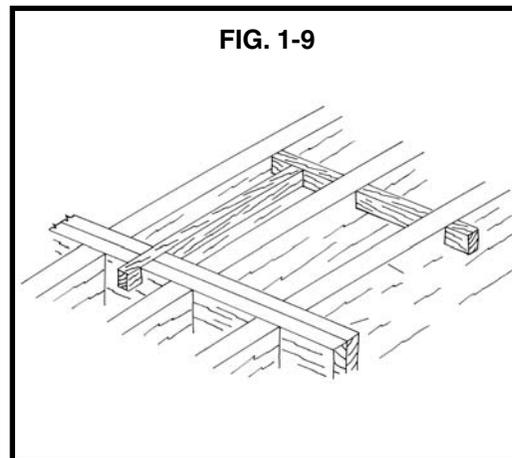
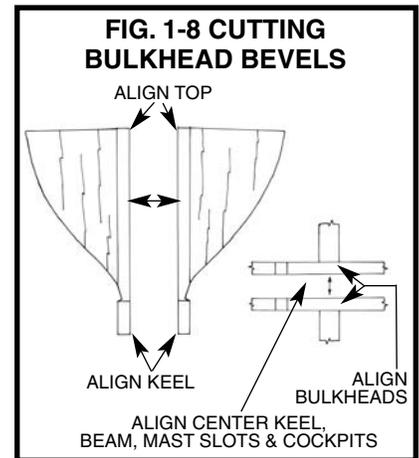
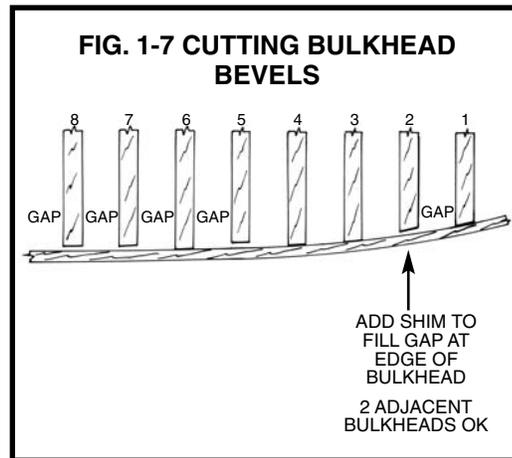
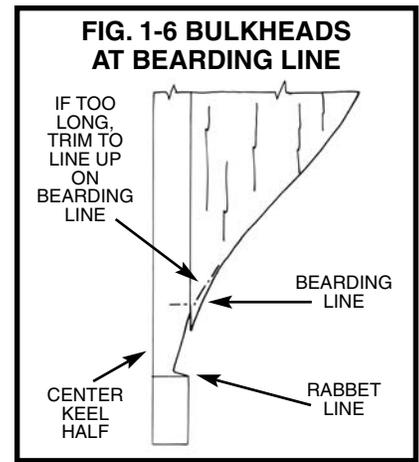
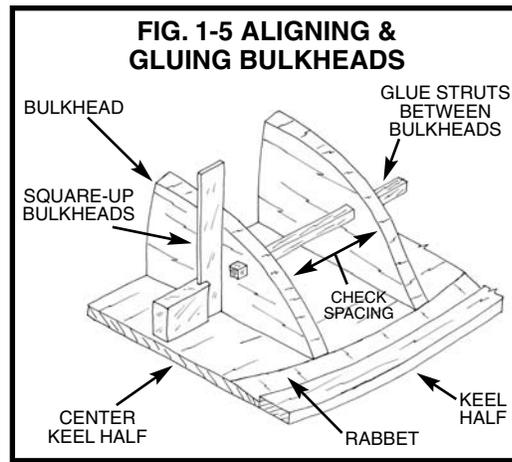
9. Installing Windlass Bitt and Smoke Stack Blocks

To provide support and pre-cut locator holes for windlass bitts and the cabin heater stack, laser-cut blocks of 1/8" basswood are provided. These blocks fit under the deck plank. Fit these laser-cut blocks flush with the top of the bulkheads (*Figure 1-11*).

Note: When fitting the two bitt blocks, make sure the spacing between the port and starboard hole is 5/16" (5/32" to each hole from centerline). Trim the blocks if necessary to get this spacing. 5/16" is the width of the bowsprit that fits between the bitts.

10. Before Moving On

Before proceeding with the hull and deck planking, check all the framing. Make sure it is all in place and all nice and flush. The framing sets the foundation for the final planking. You don't want to get started and find out that something is out of skew. Double check those bulkhead bevels, so you know when you plank you will have a fair hull form to work with. Many beginners tend to rush through this stage only to find they are really not ready for attacking the planking.



STAGE 2: PLANKING THE HULL AND DECK

Some common boatbuilding terms used in the planking process for this model are:

Plank: Single length of wood used to plank a hull or deck. A strake is a continuous line of planks from wherever it begins to where it ends. Referring to plan sheet 2, note that there are 17 strakes on each side of the hull that run from the stern post to the stem. There are approximately 3 planks to each strake. The plank shapes as developed for the prototype model are laid out on the supplemental sheet.

Garboard strake: Planking strake adjacent to the keel.

Broad strakes: One or several planks adjacent to the garboard; wider than most but usually not as wide as the garboard.

Sheer strake: Uppermost line of planking on a hull.

Belts: Group of planks along the hull. Belts are laid out using battens (temporary strips of flexible wood).

Spiling: Process for marking and cutting a plank to a given shape.

Edge bending or springing: To bend a plank edgewise.

Fair: Refers to smooth, gradual curves when planking.

Stealer: Plank inserted into another plank or between two adjacent planks to reduce their width and provide greater width of coverage. Or, when two planks taper toward a narrow end, both may have to be cut off and a wider plank substituted to leave enough wood for fastening.

1. Bending Wood

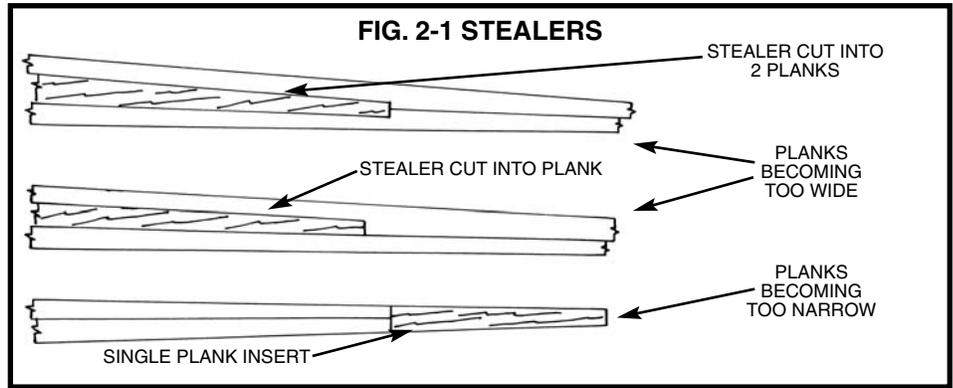
Building a plank-on-bulkhead hull requires bending some wood without distorting its desired position (doing so stresses glue joints and fasteners). Wood is bent by:

Steam bending: Hold the plank over a kettle of boiling water and bend. Hold the wood in position until it cools. Although the plank should remain in that shape, it may spring back slightly.

Microwave steaming: Wrap the planks in a wet paper towel before heating. Since microwaves differ in wattage, experiment to determine what power level to use and for how long.

Soaking: Submerge the plank in warm water for several hours. Try adding a little household or pure ammonia. This speeds up the process, making the fibers slippery so the wood bends more easily. After soaking, place the plank in a fixture until completely dry.

Soldering iron: Large soldering irons with a tubular end are ideal. Clamp the iron upright in a vise. While the iron heats, soak the strip of wood in tap water. Some



modelers prefer bending around the tube near the handle (it's not as hot), while others use the shank. Move the strip back and forth against the iron. Its heat turns water into steam and drives it into the wood. The trick is to wait until you feel the wood wanting to yield before starting the bend. Begin too soon or apply too much pressure and the strip will break. The wood dries rapidly, so care must be taken to avoid scorching. Resoak and reapply it to the iron until the desired shape is achieved. Once the piece is formed, it can go directly on the model. Because the wood's memory has been permanently altered, it will never spring back to its former shape, meaning no stress on any timber or fasteners. Spend some time acquainting yourself with this method and you'll never bother with fixtures again.

Another soldering iron approach is to lathe-turn a tip from hard aluminum, then file a 45° angle on one end. Insert the tip in a 20- or 30-watt soldering iron and heat it. Soak the wood for five minutes, then let dry for five minutes. (Woods take on water faster than they can release it.) Hold the tip against the wood to heat it. When supple, bend the plank over a form, or simply lift the end as heat is applied and bend by hand.

Commercial plank benders: Model Expo sells an electric plank bender designed for controlled heat. Another tool (Amati's Form-A-Strip available from Model Expo) bends planks without soaking or heating. It looks like a pair of pliers with one flat jaw and a chisel for the other. When squeezed on a plank, the chisel depresses one side of the wood, causing it to bend. Repeat the process along the plank until it assumes the correct curve. However, squeezing too hard will cut the wood in half. This tool bends planks in only one direction, so it's good for bow planks, but not those at the stern that are concave.

2. Getting Started

Most modelers find planking tedious. Work slowly and think of each plank as a project unto itself. Since hull sides are identical, simultaneously cut one pair of

port and starboard planks to shape. Fit the plank on one side, then the other. Don't rush. Speed results in frustration and a poor job.

3. Planking Battens & Belts

Hulls are easier to plank when divided into belts. They flow along the hull in smooth curves. Each is designed to lay the planks against the frames without excessive edge bending. They gently sweep up at the ends like the deck sheer. Planks within a belt are usually evenly spaced, tapered, and fitted. Belts prevent errors from accumulating.

When selecting a belt width and the number of planks it contains, consider how the planks taper and lay against the frames (bulkheads on our plank-on-bulkhead model). If the planks are too wide, they won't lie flat against the bulkheads. Taper them too much and not enough stock is left for fastening. Should this happen, a larger plank must be substituted for two planks to increase the width. In some areas, the distance between planks widens rather than tapers. If it becomes too wide, a stealer must be added. While these alterations are acceptable and employed on many boats, the best run of planking limits the number of stealers. Figure 2-1 illustrates some inserts.

Plan Sheet 2 provides in-depth details on how to lay out the planking. Three belts were selected for this model. Study the fore and aft views plus the profile view to gain a complete picture.

Note: The planking layout was developed by the model designer, as no similar layout exists on the Chapelle reference drawings. Only some of the plank widths are indicated. Consequently, feel free to develop your own layout if you so desire, but you should be warned that a planking layout is not as easy a task as it may seem. If you are a beginner, you best stick with what is shown on the plans. The supplemental sheet supplied showing the shape of the individual planks in each strake was developed with strict adherence to the planking layout as shown on plan sheet 2.

4. Spiling

Edge bending planks on real boats occurs on a limited basis. Wood is rigid, so many planks must be cut to shape. Spiling (Figure 2-2) is simply a matter of transferring curves to a straight plank, then sawing them out. Many narrow planking strips (especially on models) are flexible enough to edge bend in place. However, others must be spiled. All of the planks on the prototype model were spiled and shaped to conform to the planking layout shown.

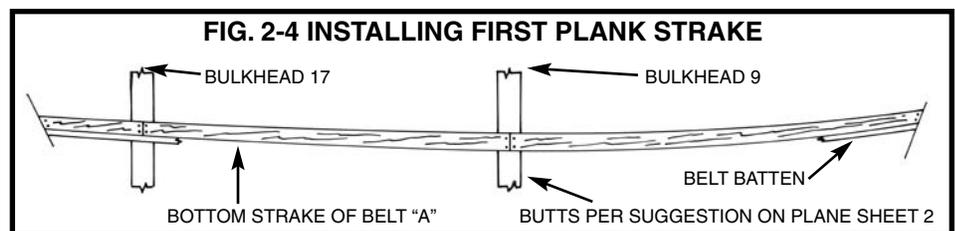
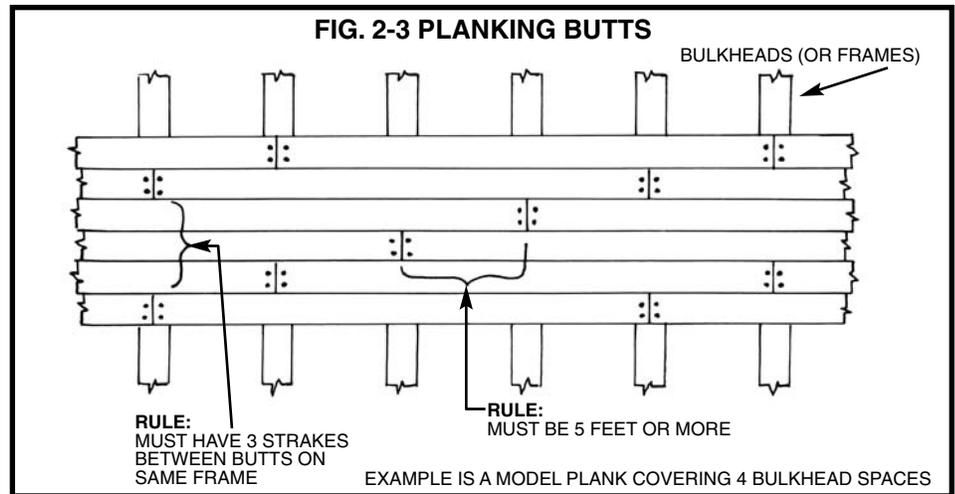
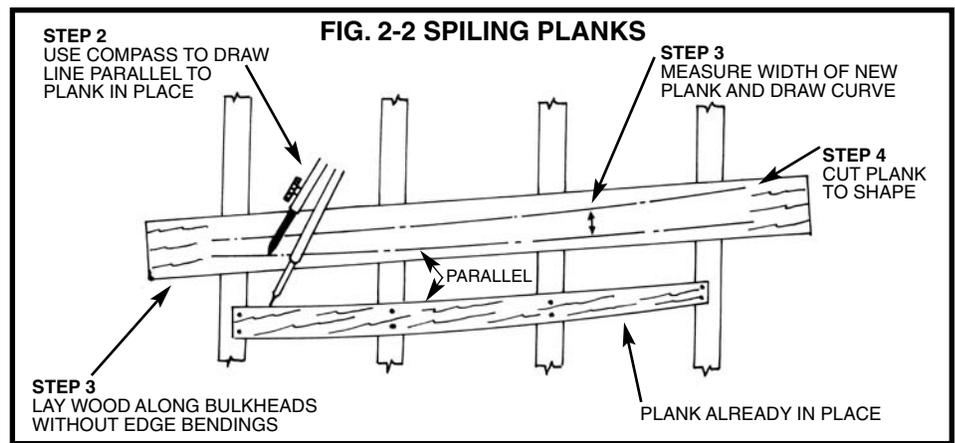
5. Planking Butts

Even though this is a relatively small boat, it is likely that the planks used were not as long as the boat itself. Consequently, butts should appear within a strake of planking. Some modelers think a plank as long as the hull is easier to use. They scribe in fake butts or omit them. Although this can be done, working with shorter planks is more realistic and has advantages. For example, tapers mark quicker and planks are easier to hold and fasten. Should a mistake occur, only a small piece is affected.

To emulate shipwright practice, place butts according to the traditional rules for wooden ships as shown in Figure 2-3. Although it may be difficult to follow the rules precisely on such a small boat, follow them as close as possible if you are interested in real boat construction procedures. If you don't care about following the rules, it is still a good idea to use shorter plank lengths on the model and to stagger the butts of adjacent planks. If the planks are too long, you may not have the correct width wood in the kit for those planks that require spiling. The kit wood has been sized based on using shorter plank lengths with butts. The planking shapes on the supplemental sheet are developed using the butts as shown on plan sheet 2.

The hull planking profile on Plan Sheet 2 has a suggested layout of butts. In this scheme, the butts are placed on the model bulkheads so the ends of the planks can be fastened to the bulkheads. The butt stagger is about 4 feet full scale, just a foot shy of the "5 feet" rule. The scheme does meet the "3 strakes between butts on same frame" rule. If you look at the layout, you will notice that once you establish the stagger (2 bulkhead spaces for our model), in order to get the 3 full strakes between the butts, this automatically sets the plank length (8 bulkhead spaces for our model). With the butts as shown, there are 3 planks per strake. The longest plank is about 16 feet full scale (8 inch model scale) which is a reasonable plank length.

Note: Basswood strips have been provided in widths of 1/4", 3/8", 1/2", 3/4", and 1". Based on the butt layout shown on the plans, all these widths will be needed for spiling and shaping the planks.



6. Fastening the Planks

Avoid the commercial plank clamp that screws into the edges of bulkheads. This leaves a big hole to contend with when installing subsequent planks. Instead, hold short pieces and use pins to position them. Be careful not to split the wood. If necessary, drill a pilot hole first. Smear a light film of white or woodworker's glue along the edge of the plank, then touch each bulkhead with thin super glue to affix the plank quickly. Be careful not to glue your fingers to the model.

Another approach is to apply super glue to the edge of a plank already in place and on the bulkheads above it. Spray or brush the super glue's accelerator on the plank to be installed, then hold it in place. The glue sets instantly and no clamps are necessary. While glue alone will secure a plank, small brass brads add additional holding power. If using brads, hammer them in after cutting off and discarding their heads.

Real boat fastenings: Our model is in a time period and size where nails (probably monel) were used to fasten the planks to the frames. Treenails (wooden pegs) were going out of fashion, and were used only on much larger boats of the period. Now many model builders like to indicate fasteners especially if the boat is not painted. This is really not recommended for this particular model as the nails would be very small and not that noticeable. However, if you still desire to indicate fasteners, here are the details you need to know about the boat's construction:

The frames of Glad Tidings are bent frames, 2-1/2" wide (about 1/8" model scale). Frames are located at stations and half stations. Our model has the laser-cut bulkheads located at the station lines, so an additional real ship frame would appear between the bulkhead locations. The frame spacing is average 12" (1/2" model scale). The average width plank would have 2 or 3 nails per plank per frame, depending on

the width. Plank butts would occur between frames and be backed by a butt block. Possibly 5 nails would be used on each end of the plank.

7. Planking the Hull

The hull is divided into three belts. Belt A contains the sheer strake or uppermost hull plank. Belt B is the bilge area planking, and Belt C contains the garboard plank next to the keel,

Referring to Plan Sheet 2, lay a tick strip along each bulkhead and mark the two belt seams between Belt A and B, and B and C. Transfer these points in pencil to the model. Now temporarily tack two 1/16" x 3/32" basswood battens along the port and starboard belt lines. Battens assure an accurate run of planks by correcting errors in drafting, tick strip marking, or transferring.

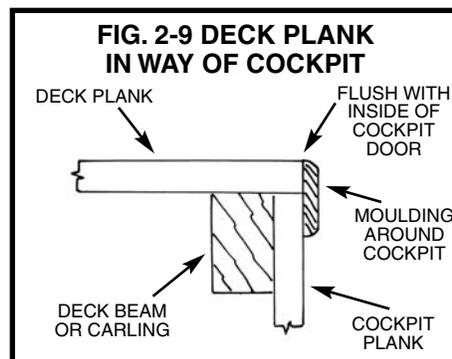
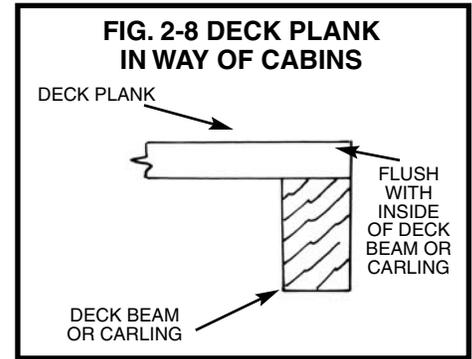
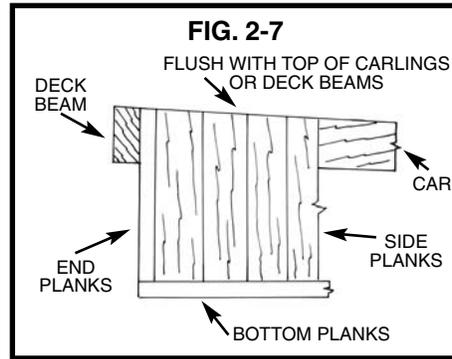
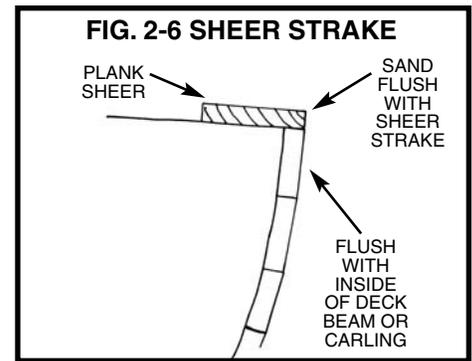
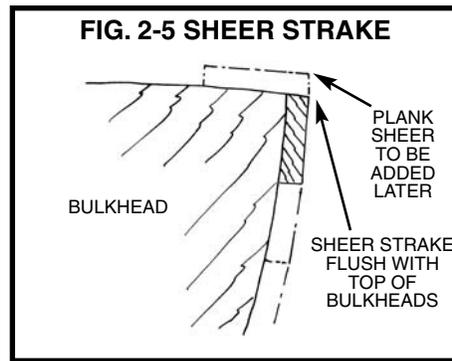
Once the two battens are in place, check their flow. Look at the model from the side and from the bow and stern. Do the battens have a pleasing, smooth curve? Are they symmetrical? If necessary, adjust the battens referring to the planking profile on Plan Sheet 2. When everything is fair, make sure the belt seams are clearly visible. Remark those that aren't. Now, either remove the battens or leave them in place until they interfere with installing a plank.

Tapering plank edges: As planking proceeds, the edges of a particular plank may require tapering to butt flush against its neighbor. Properly machined planks have square edges. Butting them together on a hull may produce small gaps. Most are sealed with glue or wood filler, or caulked on a real boat. Plank edges are often deliberately tapered to ensure they butt against each other, while providing a sufficient gap for caulking. To create a perfectly smooth hull without gaps, trim each plank edge as it is fit. The decision to taper or rely on filler is yours.

Laying the planks in Belt A and B: Each belt is done separately, so planking can start with any one. Many planks will require spiling. You will know as soon as you try to fit a plank and can't edge bend it in place.

Belt A and B each includes six equal width planks at station 9-10 a little more than 3/16" wide (5" real ship dimension selected) and taper to about 1/8" to 5/32" at the stem and sternpost. Lift the plank widths from the hull planking layout (fore and aft view) with a tick strip. Mark these lines on the bulkheads in pencil. Belt A and B are now completely marked.

The next step is to cut planks to fit between the marks. First, decide where you want plank butts to go. So, you may have two or three planks for each strake. Mark the butt locations on the bulkheads and don't forget to stagger the butts per the rules.



If the belt locations, plank widths and butts are accurately laid out as shown on plan sheet 2, the plank shapes as shown on the supplemental sheet will result. In fact, you may be able to use these shapes as patterns for your planking. Glue the patterns to thin card stock card and cut them out. See how it fits on your hull. Bear in mind that some trimming and shaping will likely be required to make the planks conform to your marks. The supplemental sheet of plank shapes was supplied to show the general shape of the spiled planks that conform to the planking layout on plan sheet 2. It is to assist you in visualizing what a plank shape for a particular location on the hull should look like whether you spile your own or use the shapes as supplied. If your marking out of the belts and plank widths differs from the layout on plan sheet 2, the plank shapes as shown may not quite fit. In any event they will be close and may be used as patterns to develop planks that accurately fit your model. If you choose to spile your own planks, proceed as follows.

Let's start with Belt A first and install the

plank at the belt batten. The batten can be used to spile against if necessary. Lay a piece of planking stock over the bulkheads and determine if it needs to be spiled. If so, spile the plank edge to fit the batten edge. Next, in pencil, mark the overall length and cut the plank to its final length. Then mark the position of each bulkhead (important for measuring the plank width and to know location of bulkheads for nailing).

Using a set of dividers or tick strip, lift the plank widths from the marks on the bulkheads and transfer to the stock. Draw a line through the points and cut the plank. Trace this tapered plank to obtain another for the other side of the hull (Figure 2-4). Continue until this run is finished, then complete the others in Belt A and B. Steam bending may be required at the bow and stern. Test each plank to see how easily it bends. If it appears the plank may break or be difficult to fasten, then steam bend.

When installing the uppermost or sheer strake plank, the top edge is to be flush with the top of the bulkheads. The deck planksheer will fit on top of this plank. Sand the top edge of the plank flush with the bulkheads (Figure 2-5).

Laying the Planking in Belt C: This belt consists of the garboard strake that is about 5/16" wide at station 9-10 and a broad strake about 1/4" wide. As these strakes go aft, they get much wider so a stealer has been used in the garboard to keep the plank widths within reason. The rest of the planks in Belt C are similar to the other belts but do get wider going aft. Mark the butts as you did in the other belts. Use the planking profile on Plan Sheet 2 to determine the plank widths in Belt C aft. The fore and aft

planking view can't show all the planks aft, so this view is necessary.

Make sure the garboard fits nicely into the rabbet along the keel. The garboard will be a most difficult strake to fit, so take your time.

Note: It should be obvious by now that you will not be able to simply select a strip of wood and plank the hull. Each plank will require cutting from a wider wood strip. The kit contains wood of various widths for this purpose. Select the appropriate width for each plank.

When the hull planking job is finished, sand the entire hull and if necessary fill any gaps between planks with glue or wood filler. Make sure all planks fit the rabbet at the keel, stem, and sternpost. Trim the ends if they are sticking out from the rabbet.

It is advisable at this point to glue in some reinforcing blocks inside the hull in way of the chain plate locations. This will add thickness and provide a solid purchase for the nails when the chain plates are later installed.

8. Planking the Deck

Installing the planksheer: The planksheer, which is the continuous plank around the edge of the deck, is laser-cut from 1/16" basswood. Each half of the planksheer includes 3/32" x 1/8" holes and one 3/32"

x 3/16" hole for the bulwark stanchions which will be discussed in Stage 4.

Fit the planksheer on top of the bulkheads. The outer edge of the planksheer covers the top of the sheer strake plank and will be flush with the outside of the sheer strake. Sand the edge of the planksheer vertically (Figure 2-6).

Planking inside the cockpit: Plank the cockpit floor and vertical sides and ends with 1/16" x 1/8" planks except for slightly wider planks to complete the run. The vertical planks fit inside the deck beams and carlings and are flush with the top of the beams and carlings (Figure 2-7).

Installing the deck plank: The deck plank layout is shown on Plan Sheet 3. Planks are 1/16" X 3/16" except for wider margin planks in way of the cabin and cockpit sides. All planks are parallel to the centerline and there are no ribbed planks. The planks just feather off at the planksheer. Start planking at the centerline and work your way port and starboard. As you plank, cut out the holes for the mast mortise, and the holes for the windlass bits and stack where the laser-cut blocks are located.

Note: To indicate caulking between deck planks, paint one edge of the deck plank dark brown before laying the plank. Be careful as you don't want to get any paint

on top of the plank. Another method, instead of painting the edge use the tan colored woodworkers glue when installing the planks. It's dark enough to fake the caulking.

Deck plank in way of cabins: Fit the planks flush with the inside of the deck beams and carlings in way of the cabins. The cabins will actually sit on top of the plank edge (Figure 2-8).

Deck plank in way of cockpit: In way of the cockpit, fit the planks to 1/16" inside the deck beams and carlings, to be flush with the inside of the cockpit vertical planks. While you are at it, you can add the moulding around the edge of the cockpit and the two main sheet cleats on the port and starboard sides of the cockpit moulding (Figure 2-9).

Note: In the above, this is the first time cleats have been mentioned. Cleats are laser-cut from 1/16" cherry wood and are provided in a strip of eight cleats. Cut the cleats out from the strip and shape the ends. The cleats should be about 3/8" long.

Sand the deck smooth before proceeding to the bulwark installation.

STAGE 3: MOUNTING THE HULL

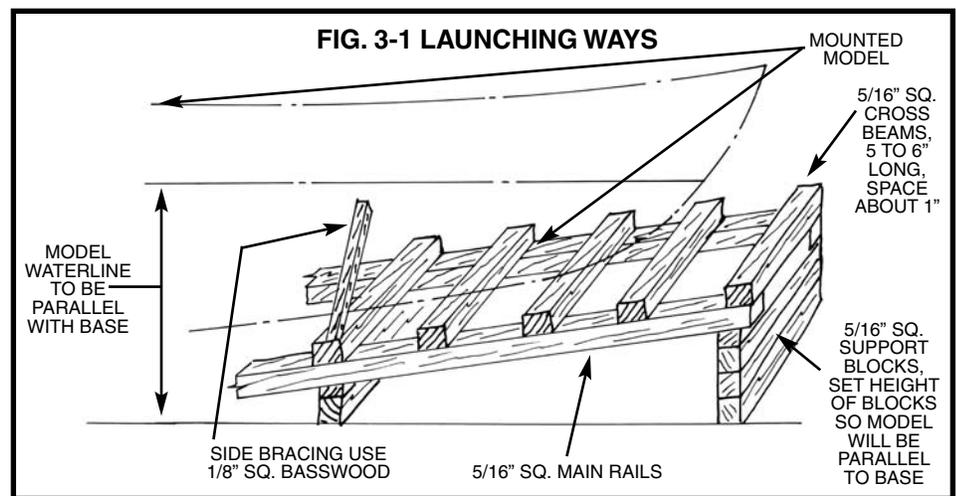
There is still a lot of work to do and the model can be mounted in a temporary cradle to hold it. However, now may be a good time to consider the final mounting. Mounting the hull now prevents damaging it when handling the model. Proper mounting is important, because future alignments will require a true waterline. While any modeler can devise his own mounting, this kit contains a launching ways system. Other options are noted below.

No baseboard is included in the kit. However, one can be purchased from Model Expo or make your own from lumberyard stock. Cherry, Walnut, and Maple make nice bases that are relatively inexpensive. Or, you could use a simple plywood base and build a shipyard diorama. The choice is yours.

1. Launching Ways

5/16" square basswood strips are provided in the kit. Stain the basswood to look like weathered wood or use a more finished looking stain. See Figure 3-1 for a suggested assembly. There are a number of ways this mounting can be configured, so feel free to design your own layout. Look at photos of actual shipyard ways for ideas.

Adjust the mounting as necessary so the models load waterline (and the hull bottom paint line) is parallel with the baseboard.



2. Option - Mounting on Pedestals

Brass or wooden pedestals can be purchased from Model Expo. Drill the pilot holes for the pedestals. The model should sit with the load waterline parallel to the baseboard. If something went awry and the balance is off, you can add a shim under one pedestal to correct it. One pedestal should be longer than the other, so buy the correct lengths.

3. Model Case

Models should be cased to protect them from dirt and damage. Furthermore, most

competitions require entries to be cased. A case, either glass or plastic, is a cheap insurance policy. Those who wish to follow this route should use the baseboard as the bottom of the case. A case's outside dimension should be at least 4" longer than the model (2" fore and aft), 4" wider (2" port and starboard), and 2" higher.

For the gamblers who don't want a case, round the baseboard's top edges or cut a simple chamfer. Those with access to a router can cut mouldings along the edges. Paint or stain the baseboard.

STAGE 4: INSTALLING THE BULWARKS

The bulwarks will probably be the most difficult construction task on this particular model, especially for the beginner. The angles of the stanchions, curvature of the overall bulwark, shape of the bulwark plank strake and the rails, are all critical to the success of the completed bulwarks, so take your time.

This stage discusses the bulwarks themselves plus any of the fittings attached to the bulwarks. All of the details are shown on Plan Sheet 2 and 3.

Bulwark stanchions: The planksheer has pre-cut holes for the bulwark stanchions. The stanchions are lettered A through S on Plan Sheet 2 for identification. Stanchion A is $3/32" \times 3/16"$ and all others $3/32" \times 1/8"$. Plan Sheet 2 has sketches showing the angles the stanchions are to be fitted in relation to the deck. The sketches also show the lengths of the stanchions above the top of the planksheer. The stanchions should fit into the planksheer holes at least to the bottom of the planksheer. Shaping of the ends of the stanchions or tapering of the holes may be necessary as the angle of the stanchions become larger toward the bow.

Pre-fit all the stanchions in the planksheer holes. It is not likely that all stanchions will be at precisely the correct angle, so use a batten about $1/16" \times 3/32"$ and clamp it to the outside top of the stanchions to fair the alignment of the stanchions. When all the stanchions are at the correct angle, glue the stanchions in the holes. Super glue is ideal for this (Figure 4-1).

Short knees: The next bulwark support aft of stanchion S is a short knee, port and starboard. The knees are laser-cut from $1/8"$ basswood but required cutting some bevels as shown in Detail 2-E on Plan Sheet 2. Glue the knees on top of the planksheer and deck plank (Figure 4-2).

Long knee: Aft of the short knees, at station 19, there is a long knee, named because the port and starboard knees are connected at the center. This knee is also laser-cut from $1/8"$ basswood, but like the short knees requires beveling. See Detail 2-E on Plan Sheet 2 and Figure 4-3.

Note: Check the outboard angle of both the short and long knees to make sure it is following the flow of the bulwark curve. You can continue the batten used for the stanchions as a guide.

Knightheads and hawse timbers: On the real boat the knightheads on each side of the bowsprit are separate timbers. Between the knightheads and stanchion A are the hawse timbers, about two timbers on the real boat. For the model, the knightheads and hawse timbers can be cut from a single $3/32"$ thick block. Note that the block will

FIG. 4-1 ALIGNING BULWARK STANCHIONS

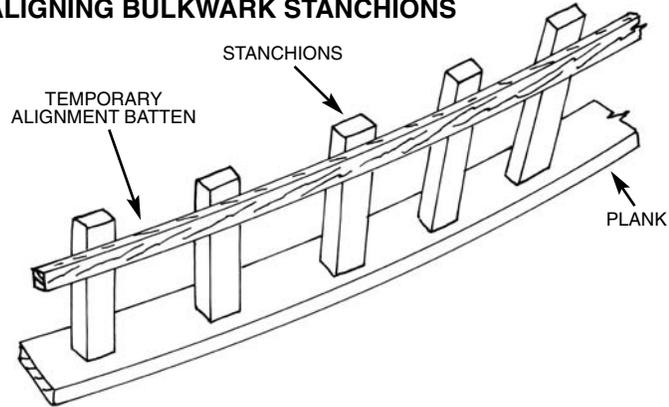


FIG. 4-2 ALIGNING BULWARK STANCHIONS

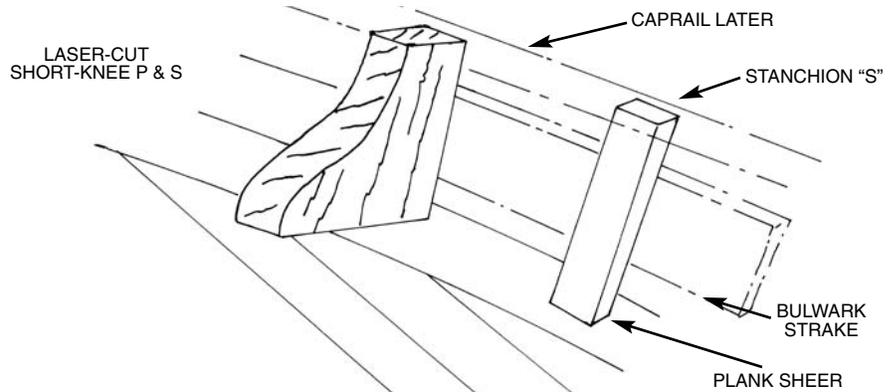


FIG. 4-3 LONG BULWARK KNEE AT STATION 19

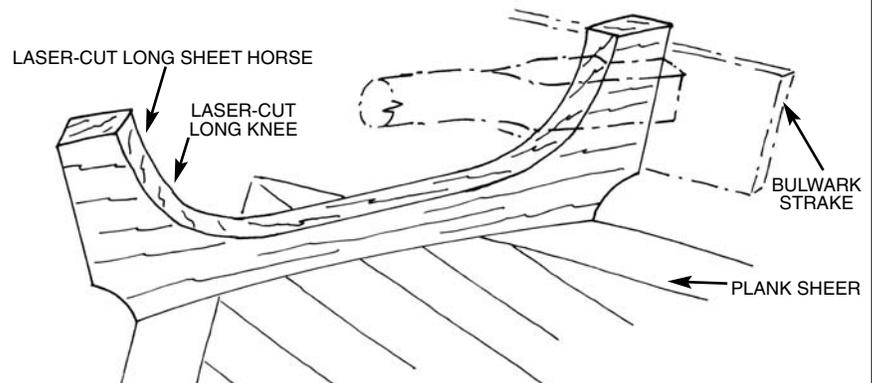
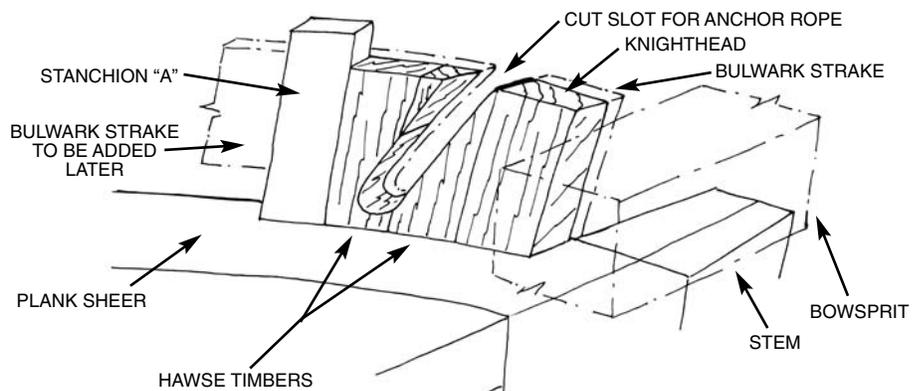


FIG. 4-4 KNIGHTHEADS & HAWSE TIMBERS



be flush with stanchion A.

Before gluing the block in place, shape the top and bottom and cut the hawse slot where the anchor cable exits. Glue the block on top of the planksheer and to the side of stanchion A (Figure 4-4).

Note that the blocks are 1/16" higher than the top of the bowsprit. When the bowsprit is installed, fit a 1/16" thick piece on top of the bowsprit between, and flush with, the top of the knightheads (Figure 4-5).

Tombstone and bulwark plank strake:

The tombstone is like a transom. It is laser-cut from 3/32" basswood. First, cut the bevels on the tombstone as shown on Plan Sheet 2. Notice that the top of the tombstone has a cut-out which is a boom crutch for the main boom.

The bulwark strakes are supplied as laser cut pieces. Plan sheet 3 shows the bulwark strake as three pieces with two butts and a stealer which is probably how the real boat was constructed. The bulwark strakes provided are as developed for the prototype model and are in two pieces with one butt. The entire strake runs from the bow, covering the knightheads and hawse timbers, back to the tombstone. From the long knee at station 19, the bulwark cantilevers (overhangs the hull) out to the tombstone.

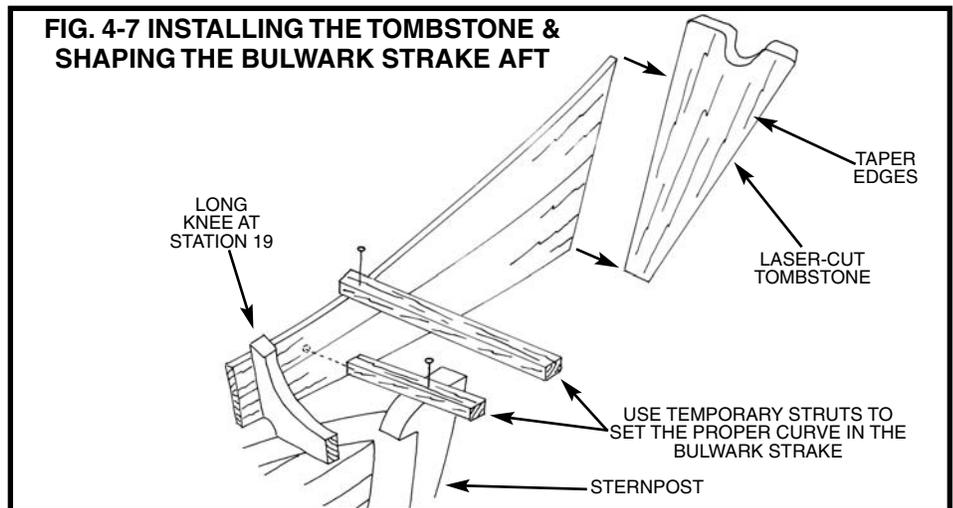
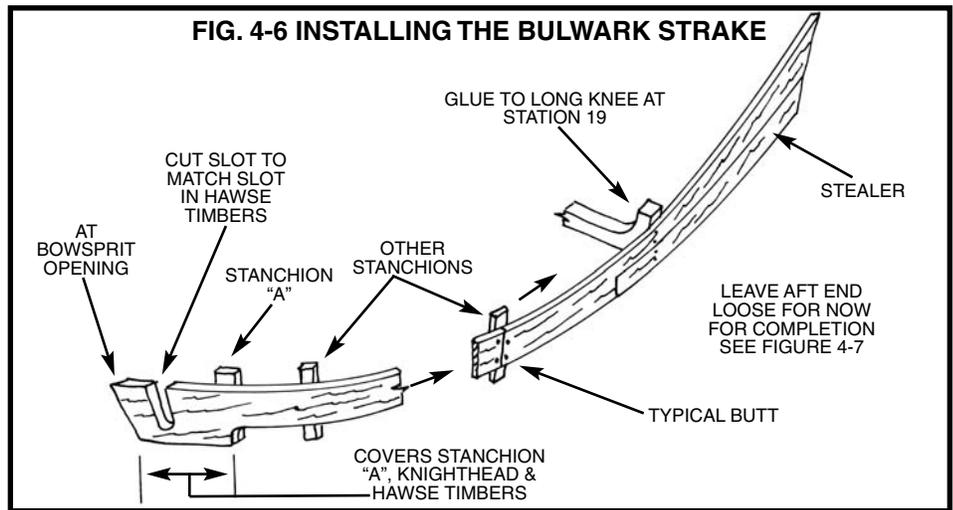
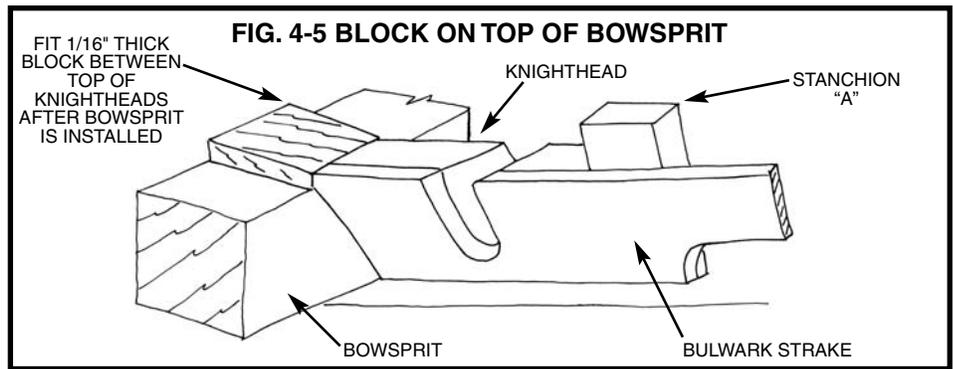
The bulwark strakes provided are deliberately long to allow trimming and fitting to your model. Align the bottom edge of the forward strake to stanchion A at the bow. Mark the butt location at the appropriate stanchion aft and trim to fit. Fit the aft strakes and you are ready to install.

Glue the bulwark strake from the bow back to the long knees at station 19. Note that the bulwark strake from the bow to the rear side of stanchion A goes down to the deck. Aft of stanchion A, the strake is above the deck which provides a long scupper for riding the deck of water. Before gluing, double check that the top of the bulwark strake at the tombstone is the same height above baseline on both sides (Figure 4-6).

Next, glue the bulwark strake to the sides of the tombstone. Note that the bulwark strake curves from station 19 to the tombstone. The strake will be held in the correct position by the metal bar bracket at the sternpost which will be installed later. For now, pin a temporary strut across the top and bottom of the bulwark strake to hold the correct curve (Figure 4-7).

Bulwark stiffening aft and seat of ease:

You are now starting to complete the bulwark area that overhangs the hull. First, add the 3/32" square stiffener at the bottom of the bulwark strake from the tombstone to the long knees at station 19. Then, add the 2 vertical 3/32" x 1/8" stiffeners. Note they are not exactly vertical, and that they go up to the rail location. To stiffen the sides of the bulwarks, add the bar bracket. See



Detail 2-C on Plan Sheet 2 and Figure 4-8. The seat of ease platform (with the hole) is laser-cut from 1/16" basswood. First, add the cross support at the front of the seat. The seat platform sides may need to be trimmed to fit the side of the bulwark strake and requires a cut-out for the last vertical stiffener. On top of the seat, add the hinged cover, cut from 1/16" basswood. The hinges can be faked with a strip of brass, self adhesive metal tape, tin foil or any thin metallic material. However, none of these materials are contained in the kit.

Bulwark cap rail: The rail is the final part of the bulwarks themselves. Glue the laser

cut rail pieces together over the plans using waxed paper to avoid gluing to the plans. Align the joints as shown on the plans. The ends will be a bit long to allow for fitting. 5 minute epoxy is ideal for this. Round the top edges of the rail and fit to your model. Some trimming at the ends will be required. The rail is flexible enough to conform to the proper shape to fit the stanchions. A few nails through the rail into the stanchion ends will assist in gluing the rail in place. Pre-drill the nail holes to avoid splitting the stanchions. The nails can be left in or removed and the holes filled.

Main sheet and jib sheet horse: Both the

main sheet horse and the jib sheet horse are laser cut but requires shaping as shown in Detail 2-D and 2-E on Plan Sheet 2. Glue the main sheet horse to the long knees at station 19. The jib sheet horse butts into a 1/16" x 3/16" support plank glued to stanchions D and E. Trimming the ends of the horse may be necessary to fit.

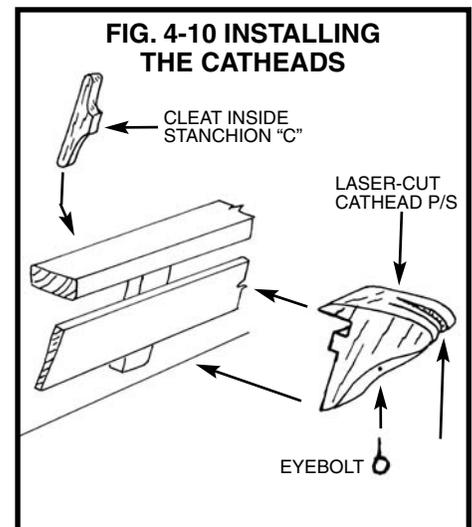
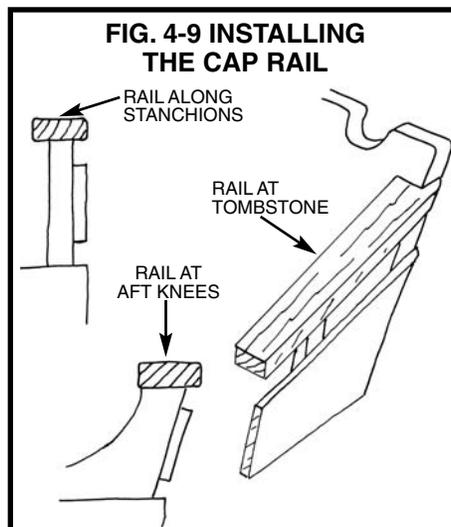
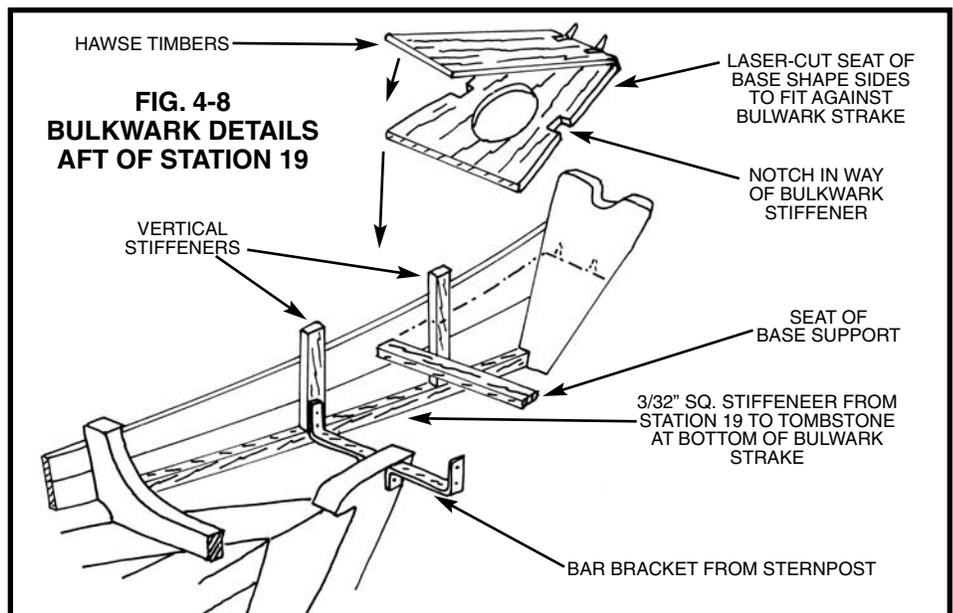
Note: The main sheet horse is laser-cut from 3/16" basswood but should be 5/32" wide, so sand it down before rounding the center. This was just a convenience for the manufacturer as no other 5/32" laser-cut parts were needed.

Catheads and cathead cleats: The catheads are laser-cut from 3/16" basswood and glue to the rail and bulwark strake. Some trimming may be necessary to fit your made rail and strake. Also, cut the groove in the top for the anchor holding line. Before installing the catheads, add the eyebolt in the underside (Figure 4-10).

There is a cleat on the inboard side of stanchion C, port and starboard. Add these at this time.

Anchor chafing bar: On top of each rail just in back of the catheads there is a metal chafing bar. 1/16" brass bar has been provided in the kit for the bar but you will need to shape it to the curve. Another way to do this is to hammer some small diameter wire solder flat and shape to the curve.

Hawse slot chafing bar: There is a small half-round bar in line with the hawse timber slots as a chafing bar for the anchor rope. Use a brass bar and file it to a half round shape or use solder as described above.



STAGE 5: BUILDING AND INSTALLING THE CABINS

Note: On the real boat, there is a slight difference in the camber of the fore and aft cabin tops, and a slight difference between the front and rear camber of the aft cabin top. However, for the model design, a uniform camber has been used for both cabins. Consequently, all the cabin top beams have identical camber. This provides a simpler cabin top construction and does not have any noticeable effect on the appearance of the cabins.

Both cabin sides and ends are made up of 3/32" thick planking. The cabins sit on top of the deck plank and the inside of the planking is flush with the inside of the deck beams and carlings. On the real boat, there is a coaming around the inside of the deck beams and carlings which extends several inches above the deck. Obviously, this coaming prevents the entrance of water into the boat under the cabin planks. Also, there is a possibility that the cabins were removable leaving the coamings around the open-

ings; only a guess. In any case, the coaming is not needed for the model. Instead, the plan view and Detail 2-A on Plan Sheet 2 shows some 3/32" x 3/16" basswood tabs around the deck beams and carlings. These tabs are for positioning the cabins and can also be used as glue tabs for securing the cabins to the deck.

The cabin construction is shown on Plan Sheet 3.

Side and end planking: There are a number of ways to approach the cabin construction, but here's a suggestion. Follow the planking layout on the plan. Pre-glue up a panel from 3/32" planks for the front and rear ends of the cabins and the cabin sides. Cut the camber curve into the top of the ends. The plan should be correct but make sure the top camber curve on the ends is identical to the shape of the laser-cut cabin top beams. Next, cut the sheer curve for the sides. Caution-don't forget the bevel at the

top of the sides to account for the cabin top camber. Leave the lower planks wider than the final shape for now.

Cut the lower camber (hull deck camber) on the cabin ends to match the deck. Cut the outer edges of the cabin ends. Notice the slope that gives a slight tumblehome to the cabin sides. Fit a template card inside the cabin carlings at the deck and mark the deck sheer. Transfer this to the cabin sides. Bevel the bottom edge of the cabin sides to account for the tumblehome. Cut the cabin sides to length, then glue the sides to the ends, making sure the cabins fit the deck shape and the inside is flush with the deck beams and carlings.

You now have a box for each cabin that fits the deck and you can complete the rest of the cabin detail with the cabins off the deck. The cabins can be completed and painted and then plopped in place on the deck. Again, just make sure the cabins are

going to fit on the deck properly when completed.

Now you need to drill holes in the ends and sides for the port light britannia castings, cut an elliptical hole (compass view window) in the rear side of the aft cabin, and cut-outs in way of both companionway openings. As an option, drill and cut these openings before the four sides of the cabin are glued together. The companionway cut-outs could even be left out as you do the basic plank panels. This would probably be the best way to go. It is easier to handle individual panels rather than a box.

For more realism, fit the port light castings and the compass window with plastic sheet or glass. Also, if you can see anything inside the cabin through the port lights, paint the inside of the cabins flat black.

Figure 5-1 illustrates the cabin assembly thus far.

Cabin top beams, carlings, planking, and edge moulding: The cabin beams are laser-cut from 1/8" basswood. All parts are the same length so mark a centerline on all beams and cut the ends off to the correct length as needed. Install the beams and the carlings in locations shown on the plan.

Plank the top of the cabins with 1/16" x 3/16" planks except for the wider planks at the sides. Fit all planks flush with the inside of the openings bounded by the beams and carlings. Finally, add the 3/32" half-round edge moulding around the cabin tops (Figure 5-2).

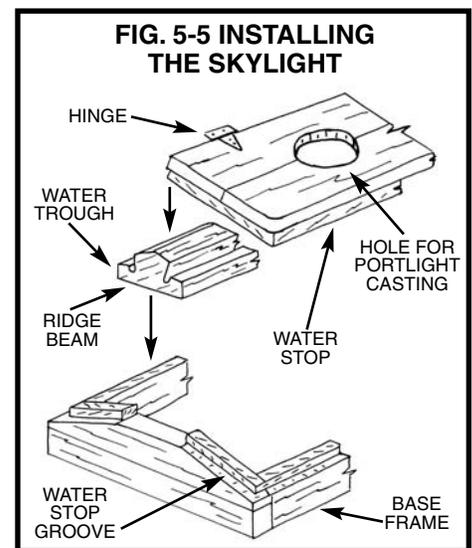
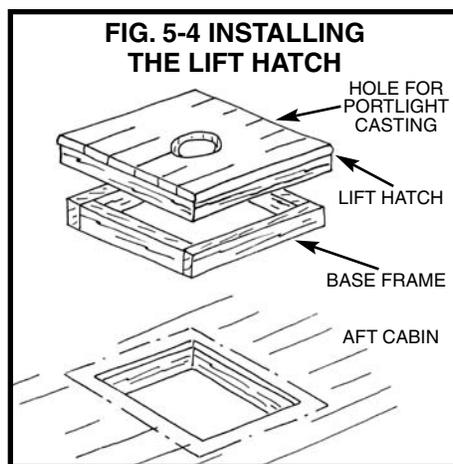
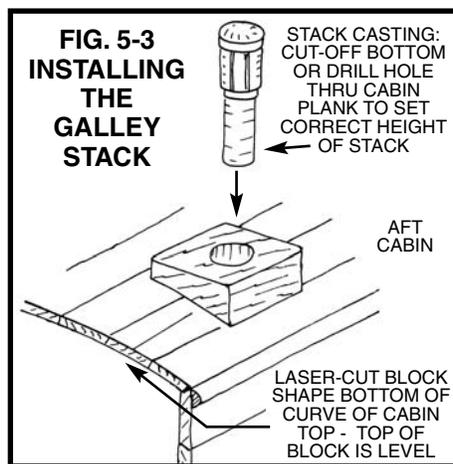
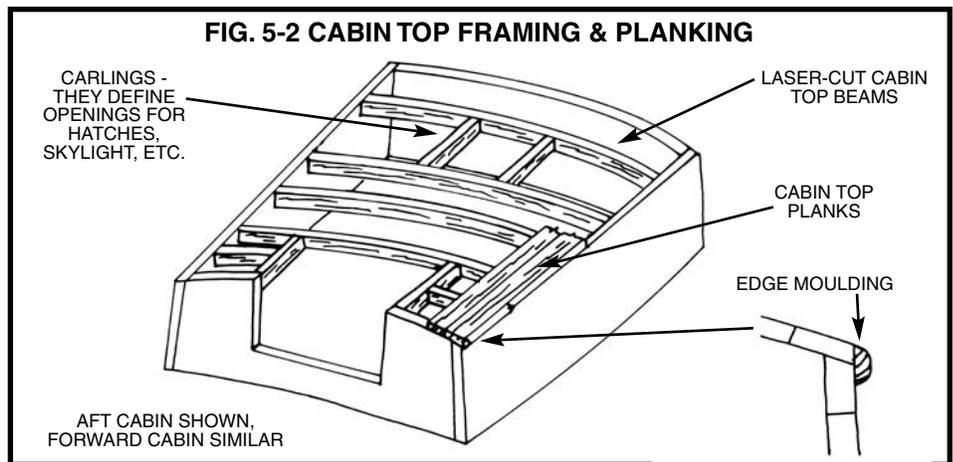
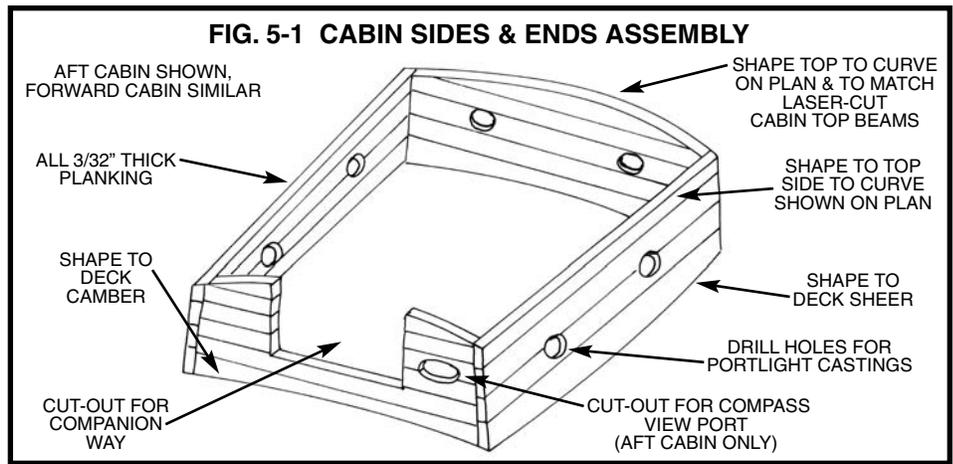
Galley stack: The galley stack is the same type casting as used for the deck cabin heater. First, fit the laser-cut 3/16" basswood block which is the stacks base. Taper the bottom of the base to the cabin top camber so its top will be level. Finally, fit the stack in the pre-cut hole in the laser-cut block. For length, drill a hole through the cabin top plank or just cut off the bottom of the stack casting (Figure 5-3).

Lift hatch: This is a very simple lift hatch. Construct from stripwood. Drill a hole in the top for the port light casting (Figure 5-4).

Skylight: The ridge piece is the only item on the skylight that needs a little carving from stripwood. Most of the other parts are fairly straight forward. As with the lift hatch, you need holes for the port light castings. The hinges can be faked with brass, self adhesive metal foil, tin foil, or any thin metallic material. However, none of these materials are contained in the kit (Figure 5-5).

Companionways: Companionways are always fun to make. The forward and after cabin companionways are identical, except for the lengths of the hatch slides.

First, make and fit the 1/16" thick sill in way of the lift panels. Then install the 3/64" lift panel guides on each side of the



cabin end planks. Cut the lift panels from 3/32" basswood and carve the lift handles from wood. Fit the lift panels in the guides. Cut the slides from 3/32" basswood. Add the slide groove for super detail or admit it. Plank up the sliding hatch cover and drill a hole for the port light casting. Add the cross piece at the aft end of the companionway opening and the apron on the hatch cover. You can add the actual side track under the hatch but since it cannot be seen, it could be omitted on the model.

Figure 5-6 shows the companionway assembly. Also, refer to the section on Plan Sheet 3.

Handrails: The handrails, port and starboard, are laser cut from 1/16" cherry wood. There are two long and 2 shorter ones. Fit two full length on the forward cabin. For the aft cabin, fit the appropriate lengths as they are shown on the plans. Round the edges of the portion that is grabbed by hand.

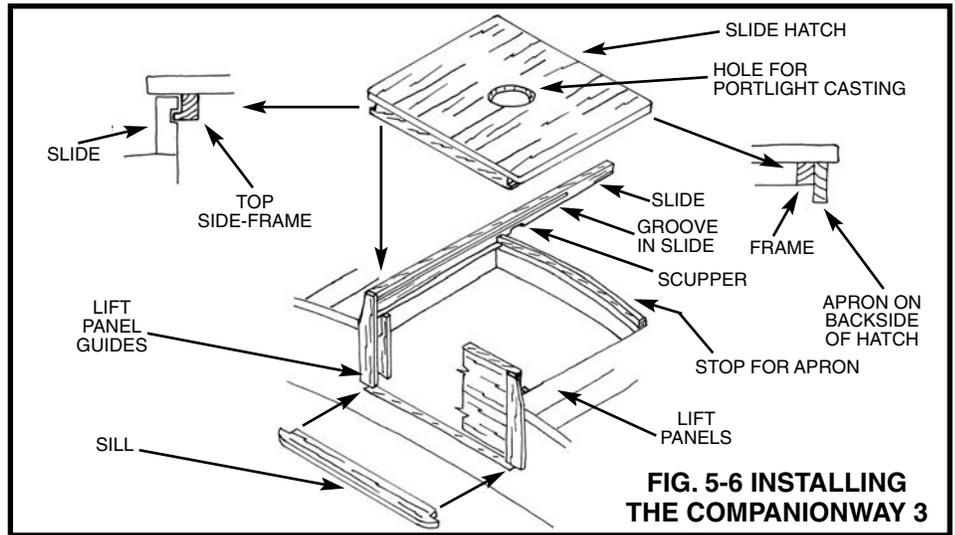


FIG. 5-6 INSTALLING THE COMPANIONWAY 3

STAGE 6: COMPLETING THE REMAINING HULL DETAILS

Rudder, tiller, and tiller comb: The rudder is laser-cut from 3/16" basswood. Taper the rudder according to Plan Sheet 2. Cut a slot at the top of the rudder stock for the tiller. On each side of the rudder in way of the tiller slot there are galvanized sheet metal cheek plates. These can be faked using brass, self adhesive metal foil, tin foil or any thin metallic material, or just paint. However, none of these materials are included in the kit. Drill a hole through the upper end of the stock for a pin to hold the tiller.

Make the pintles and gudgeons from 1/64" x 3/32" brass strip. The details are shown in Detail 3-F on Plan Sheet 3. Figure 6-1 shows some model simplifications. Nail or just glue the pintles and gudgeons to the rudder and to the sternpost. Mount the rudder on the hull without the tiller for now.

Notice the wood lock under the upper gudgeon. On the real boat this block of wood prevents the rudder from unshipping at sea.

The tiller comb is an interesting detail on this boat. The plate on the tiller is set into the comb slots at various angles for hands-off locking of the tiller. Make the tiller comb from brass strip. File the slots in the top edge of the comb as shown in Detail 3-F of Plan Sheet 3 and Figure 6-2. Glue or pin the comb to the deck in the location shown on Plan Sheet 3.

The tiller is laser-cut from 3/32" basswood. Round the edges of the tiller along the forward portion. Drill a hole in the aft end for the pin through the rudder head. Glue a 1/64" brass flat bar to the starboard side of the tiller. Fit the tiller under the main sheet horse and into the slot in the rudder head and add the pin. Set the flat bar into one of the tiller comb slots (preferably the center slot on the model) (Figure 6-3).

Water barrels: The two water barrels are lathe-turned from wood. These are stock

FIG. 6-1 PINTLES & GUDGEONS

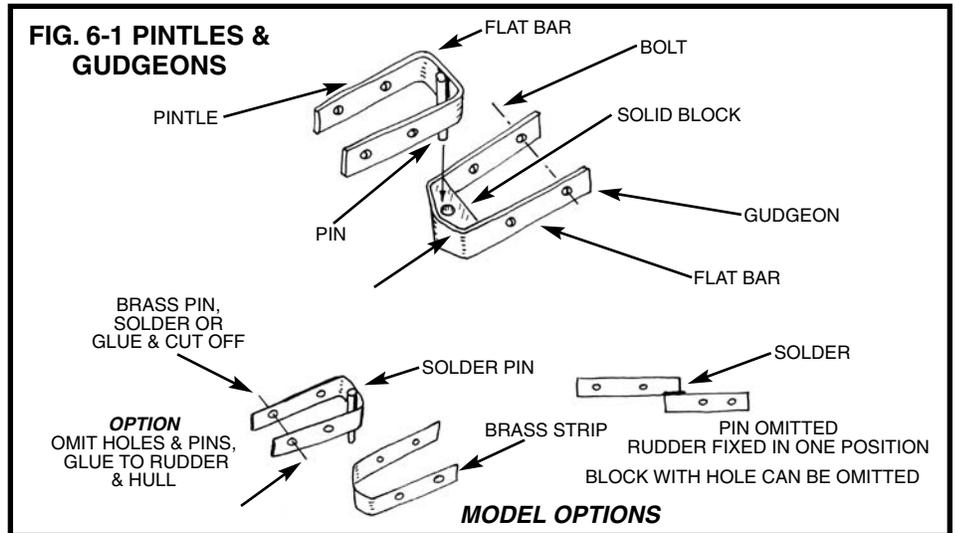


FIG. 6-2 MAKING THE TILLER COMBO

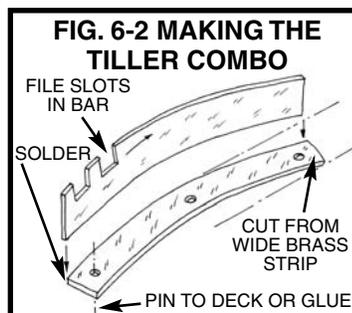
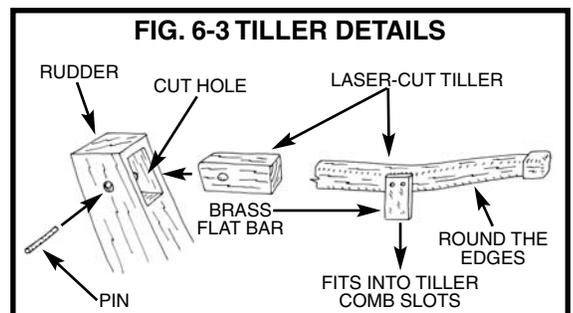


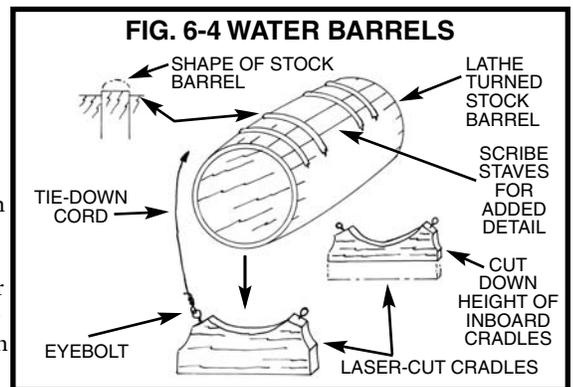
FIG. 6-3 TILLER DETAILS



turnings and can be improved by scribing some grooves to represent stave seams, and the turned hoops can be flattened to look more realistic.

The cradles for the barrels are laser-cut from 3/32" basswood. They are all the same depth so cut the bottom off for the inboard cradles. The barrels should sit horizontally. On each side of the cradles add an eyebolt for a tie down rope (Figure 6-4). Locate the barrels on deck as shown on Plan Sheet 3.

FIG. 6-4 WATER BARRELS



Cabin heater stack: The cabin heater stack is a britannia casting. Fit it in the hole on deck, starboard side, as shown on Plan Sheet 3.

Cockpit drain and scupper: The cockpit drain is shown on Plan Sheet 3. This can be simply a hole on the model. The drain is piped to a scupper pipe on the starboard side of the hull, also shown on Plan Sheet 3. This too can be a simple hole on the model.

Deck coamings outboard of the cockpit: Cut the port and starboard coaming on each side of the cockpit from 1/16" basswood as shown in Detail 3-D on Plan Sheet 3. The coamings fit between the aft cabin and the short bulwark knees. As shown on the deck plan, the coamings have a slight curvature so steam bend them to the curve before gluing to the deck.

Bowsprit, bits, and windlass: The construction of the bowsprit is discussed in Stage 7. However, it is best installed at this time in order to complete the deck details. Cut the windlass bits (could be called bowsprit bits) from 3/16" square basswood. Fit into the deck holes on each side of the center keel. Fit the bowsprit through the gap between the bulwarks and between the windlass bits. Notice that the bowsprit is tapered at the heel so does not touch the deck at that point. Add the 1/16" block on top of the bowsprit between the knightheads. This was noted earlier during the bulwark discussion (Figure 6-5).

The windlass is shown in Detail 3-E on Plan Sheet 3. The britannia casting consists

of three basic parts; the windlass, straps, and pawl. There are no whelps on the casting. Add these with brass strip. Strap the windlass to the bits with the two castings. Pin or just glue. The casting is best displayed with the ratchet crank pointed down at the deck. This is the most likely position when windlass is not being used. If you do raise the cranks, drill a hole in the ends for the crank pole. The holes are not in the casting. Next, pin the pawl castings to the side of the bits (Figure 6-6).

The hand crank windlass is cranked with wooden poles. Most likely these were stowed below when not used so are not shown.

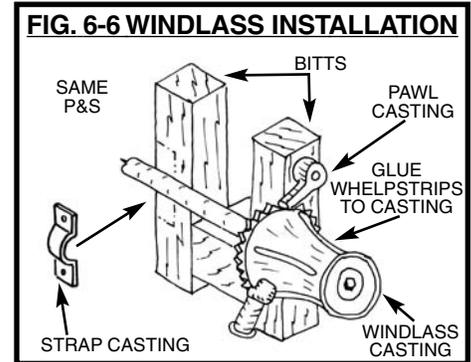
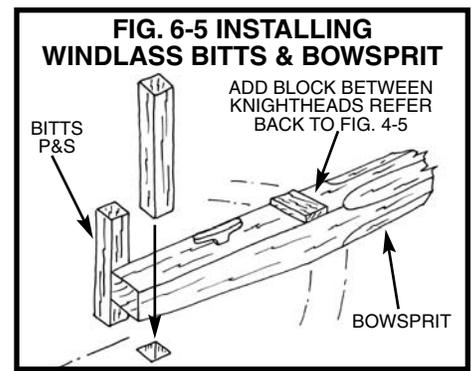
Anchors and anchor stowage: The fisherman type anchor is a britannia casting (two provided). Make the wooden stocks from stripwood. Details are shown on Plan Sheet 4.

On the model, the anchors can be displayed in various ways as shown on Plan Sheet 4. However, if one anchor is displayed hanging from the roller chock on the bowsprit, the other should be lashed to the rail.

Stem band: There is a stem band on the front of the stem as shown on the profile view of Plan Sheet 3. A 1/64" x 3/32" brass strip is intended for this band or use flattened solder.

Fore sheet eyebolt: Just so you don't forget, install the fore sheet eyebolt on centerline just forward of the mainmast as shown on the deck plan of Plan Sheet 3.

Rigging plates: There are several other rigging fittings attached to the hull: bowsprit



gammon iron, bowsprit footrope eyebolts, bowsprit shroud plates, bowsprit bobstay plates, and chain plates for the shrouds. These fittings will be discussed during the masting and rigging stages.

Well, you are finished a major part of the model - the hull. Before getting into the mast, spars and the rigging, stop and take another look to make sure everything is done to this point. Now is the time to cor-

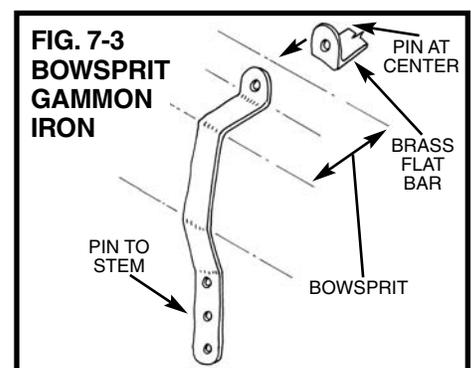
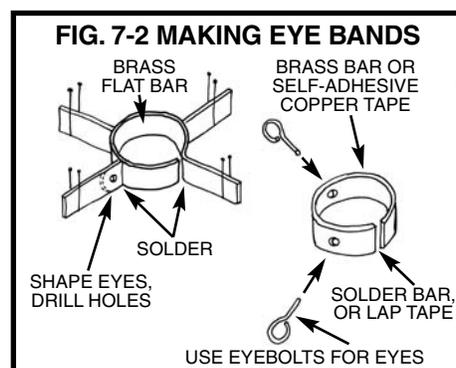
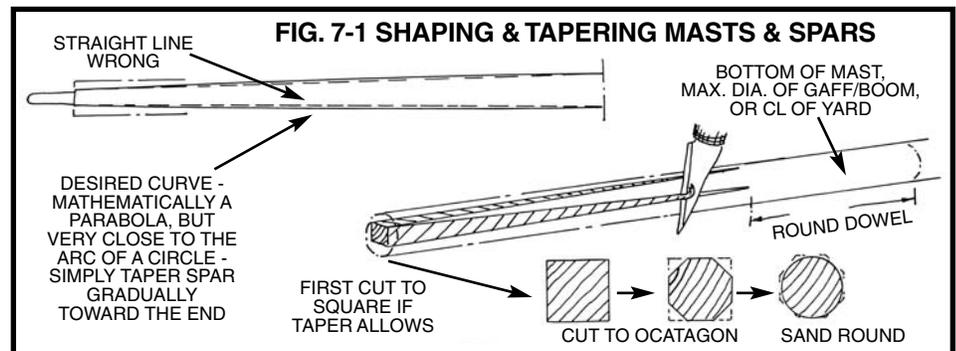
STAGE 7: MAST AND SPAR CONSTRUCTION

There are various opinions regarding the use of the term mast and spar. Is a mast also a spar? Herein, spars are defined as the bowsprit, booms, gaffs, and jib club. Masts are the foremast and mainmast.

Details of all mast and spars with dimensions are shown on Plan Sheet 4.

1. Shaping & Tapering Masts & Spars

Beech dowels are provided for the masts and spars (except for the bowsprit), but require shaping and tapering. Being round, a dowel is difficult to taper. The best approach is to first cut, plane, or file the dowel from round at maximum diameter to square at the ends, then to eight sided, and perhaps even 16 sided. Now sand or file it round. This approach prevents turning a dowel into an oval (Figure 7-1). If the taper is very slight you may not be able to cut it square at the end. Try to cut the taper on four sides down to the approximate diameter, then sand round. Although a little tricky, another way is to chuck a dowel into an electric drill or lathe and sand in the taper.



2. Building & Installing the Bowsprit

In the last stage, it was suggested that you install the bowsprit to complete the hull, so here are the details up front.

Basic bowsprit: Since the bowsprit is partly square and 8-sided in shape a 5/16" square basswood strip has been provided for the spar. Taper the spar as shown on Plan Sheet 4. Start with the heel which is tapered to a rectangular section at the bits. Outboard of the hull it is 8-sided, then round. There are two shoulders at the outer end where the metal eye bands are located. Drill a hole for the jib stay between the two bands.

Eye bands: Make the two bands at the outer end from 1/64" x 3/32" brass flat bar. Figure 7-2 shows some variations for making the bands. Also these can be faked by using strips of black paper such as photo mounting paper and eyebolts.

Gammon iron: The gammon iron secures the bowsprit to the hull stem. Make the fitting from 1/64" x 3/32" brass flat bar. There are two parts as the fitting is bolted together on top of the bowsprit. A suggested method to make this part is to form the tabs at the joint and solder the tabs together. Then use a piece of 5/16" square stock to bend the brass around. Use pliers to achieve the final shape and cut off the ends to fit. Pin or just glue the fitting to the stem (Figure 7-3).

Cleat: Install the cleat on top of the bowsprit. The cleat is for belaying the jib downhaul. Cut the cleat from the laser-cut cherry strip of cleats.

Roller chocks: The roller chocks on each side of the bowsprit for the anchor line are britannia castings. Drill holes in the fittings for pins or nails, or just glue the chocks to the sides of the bowsprit (Figure 7-4).

Jackstays: The jackstays hold the gaskets which are used to tie down the jib when furled. Make the jackstays from 1/16" x 3/64" basswood strip. The 3/64" dimension is the width of the strip. Drill the holes for the gaskets (Figure 7-5).

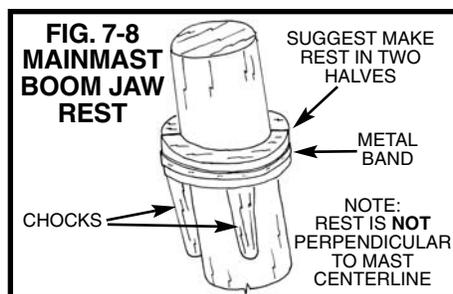
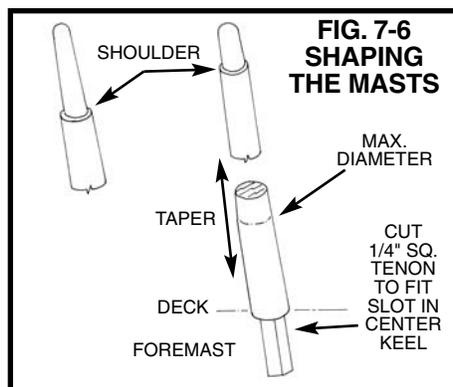
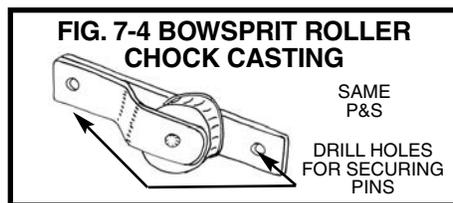
Installation: This was discussed in the previous stage.

3. Building & Installing the Masts

3/8" dowels are provided for both masts.

Basic foremast and mainmast: Taper the mast in accordance with Plan Sheet 4. The mast is 3/8" diameter from the deck up to the gooseneck (foremast) and boom jaw rest (mainmast), then tapers to a shoulder near the top, then to the top. Cut the heel of the mast below deck to a 1/4" square tenon to fit the mortise in the center keel (Figure 7-6).

Foremast gooseneck mast band: The gooseneck band along with the fittings that attach to the boom are britannia castings. The band is in two parts. Fit these to the mast. Pin the sides or just glue together



around the mast (Figure 7-7).

Mainmast boom jaw rest: Make the boom jaw rest from 1/8" thick basswood. Fit it around the mast and add a brass band around the edge, or omit the band. The boom jaw rest is supported by 3 chocks made from basswood (Figure 7-8).

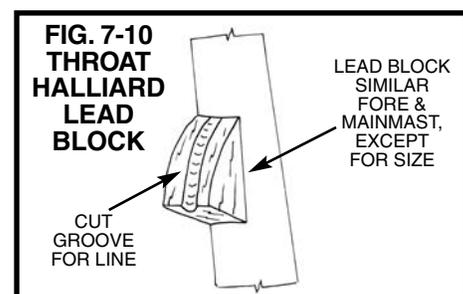
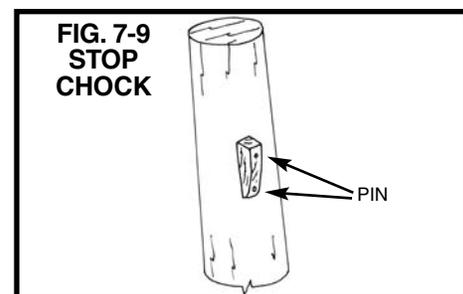
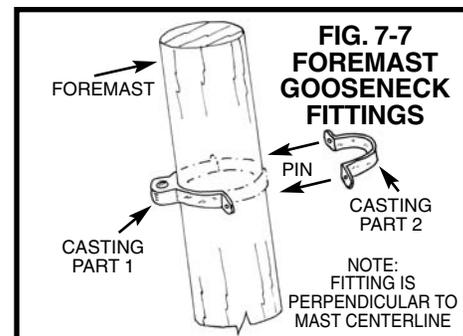
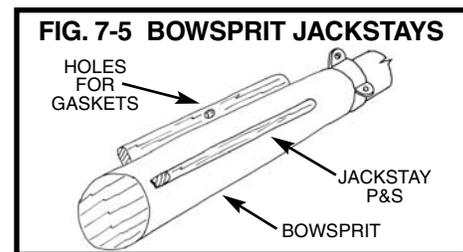
Gaff and boom chafing plates: The real boat has a galvanized sheet metal wrapping on both masts where the gaffs sit in the raised position, and a sheet on the mainmast above the boom jaw rest. This sheet metal on the model can be brass, self adhesive metal foil, tin foil, or any thin metallic material. Or, just fake it with paint. None of the suggested materials are contained in the kit. Dig into your scrap pile.

Eyebolts: Fit the eyebolts in the forward side of both masts. The eyebolt in the foremast is for the jib club topping lift, and in mainmast for the fore boom topping lift.

Stop chocks: Make the stop chocks from 1/16" square (or larger) basswood. There are two at the top of the foremast and one on the mainmast (Figure 7-9).

Throat halliard lead blocks: The throat halliard lead blocks are similar but different sizes on fore and mainmast. Make these from basswood (Figure 7-10).

Topping lift cheek block: The cheek block is for the main boom topping lift and is on the port side of the mast. No part is supplied in the kit for this fitting. Figure 7-11



gives some ideas for making it from scratch.

Belaying cleats and thumb cleat: There are 5 double-ended cleats and one thumb cleat on each mast. For the double-ended cleats, cut them from the laser-cut cherry cleat strip provided in the kit. No part is provided for the two thumb cleats; however, they are easily made from scrap cherry holding the cleat strips.

Mast coats: On a real boat the mast is secured at the deck by wedges, then covered by a canvas cover called a mast coat. The canvas is fixed to the mast and to the deck by lead hoops, or possibly just nailed. For the model, the mast coat can be made by using some cloth strips, or faked by carving the shape from basswood (Figure 7-12).

Mast hoops: Mast hoops are laser-cut from 1/16" plywood. Sand the edges and stain the hoops. There are 10 hoops for the foremast and 11 for the mainmast. The hoops should fit over the mast and the throat hal-

liard lead block. But just in case they won't they can be placed on the mast before adding other fittings. They definitely should be on the mast before any rigging is done. Temporarily tape them down to the mast so they don't flop all over the place as you work on the mast.

Installation: Set the masts in the mortises on the deck. Check the rake of the masts and check that the masts are vertical looking aft. Mast rakes are set by the pre-cut slots in the center keel. However, the actual rake angles relative to the baseline, and the design waterline are given on Plan Sheet 3. Trim the mast tenon if necessary to align the masts correctly. You may need to add some shims.

The mast coats can be added after the masts are mounted, or add the coat on the masts beforehand.

4. Building & Installing the Booms

Dowels are provided for the booms; 3/16" for the fore boom and 1/4" for the main boom.

Basic fore boom: Taper the boom according to Plan Sheet 4. Note that the maximum diameter in the center of the boom. Drill a hole in the forward end for the gooseneck fitting. Drill a small horizontal hole at the aft end for seizing the clew of the foresail.

Basic main boom: Taper the boom according to Plan Sheet 4. Note that the maximum diameter is closer to the aft end. Flatten the sides of the boom in way of the boom jaws. At the aft end, cut a slot and add a sheave for the clew outhaul. However, just a small hole can be used as a model option.

Foremast gooseneck: The fittings on the boom are castings as noted previously when discussing the mast band. The two fittings may require that you drill out the holes for the pin to connect the two fittings (Figure 7-13).

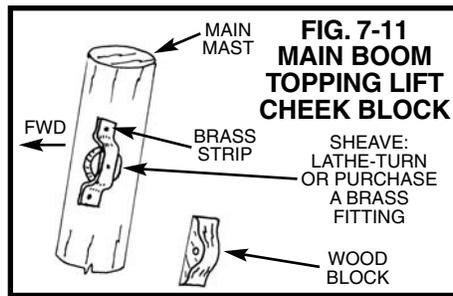
Mainmast boom jaws: The boom jaws are laser-cut from 1/8" basswood. Glue the two halves to the flat portion on the forward end of the boom. Add pins to represent bolts or these could be omitted on the model. Between the jaws, install the clapper made from basswood (Figure 7-14).

Sheet bands: The sheet bands for both the fore and mainmast are similar, just different sizes. Make the bands from 1/64" x 3/32" brass flat bar and use brass rod for the bail (Figure 7-15).

Topping lift band: Make this band from 1/64" x 3/32" brass flat bar. Refer back to Figure 7-2 for details.

Cleats: Only one cleat is required, and that is on the port side of the main boom. The cleat is for the clew outhaul tackle. Cut the cleat from the laser-cut cherry cleat strip.

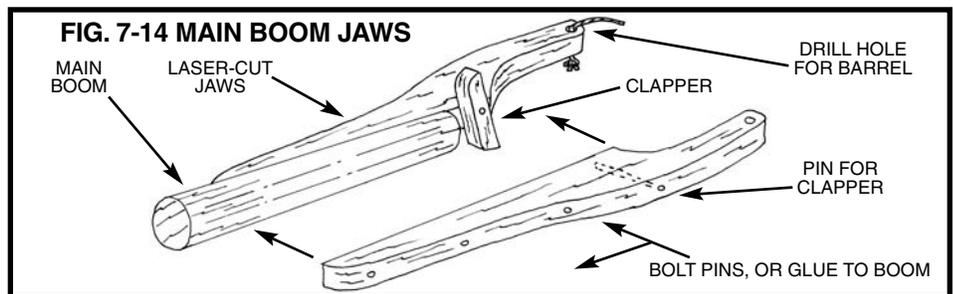
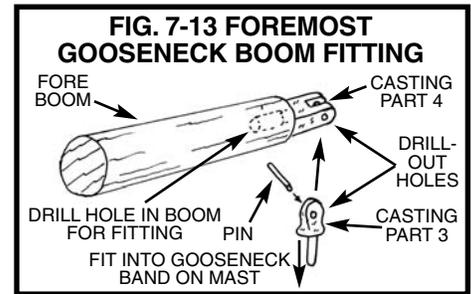
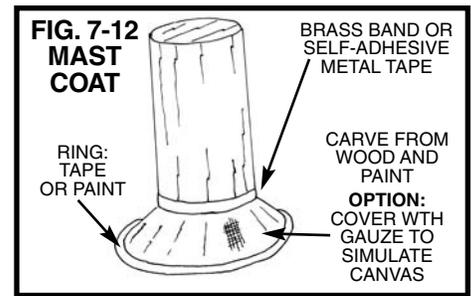
Stop chocks: The fore boom has no stop chocks. On the main boom add the chocks which hold the clew outhaul tackle. The



chocks are similar to chocks on the mast. Refer back to Figure 7-9.

Eyebolts: On the fore and main boom add the eyebolts at the forward end of the boom for seizing the tack of the sails. On the fore boom, add the eyebolt in the aft end which will be used to hook the fore boom topping lift.

Clew outhaul traveler ring: The traveler ring for the clew outhaul can be a split ring made from brass rod and installed while



rigging. However, if you want to use a soldered ring, place it on the main boom before other fittings.

Installation: Booms will be installed later while rigging, to be discussed in a later stage.

5. Building & Installing the Gaffs

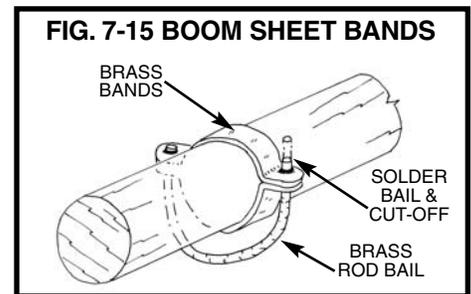
A 5/32" dowel is provided for the both gaffs.

Basic fore and main gaffs: Taper the gaffs in accordance with Plan Sheet 4. Flatten the sides of the gaffs in way of the gaff jaws. Drill a horizontal hole near the outer end of the gaffs which is used for seizing the sail.

Gaff jaws: The gaff jaws are laser-cut from 3/32" basswood. Glue the two halves to the flat portion on the forward end of the boom. Add pins to represent bolts or these could be omitted on the model. Between the jaws, install the clapper made from basswood. The details are similar to the main boom jaws except for the basic size and shape of the clapper.

Stop chocks: There are two sets of stop chocks on each gaff. These hold the peak halliards in place. The chocks are similar to chocks on the mast. Refer back to Figure 7-9.

Eyebolts: Place an eyebolt in the top of the forward end of the gaffs for the throat halliard hook. Fit another under the boom for seizing the sail. Fit an eyebolt in the aft end of the gaff. This eyebolt is most likely for a flag halliard if ever used.



Installation: Gaffs will be installed while rigging, to be discussed in a later stage.

6. Building & Installing the Jib Club

A 3/32" dowel is provided for the jib club.

Basic jib club: Taper the jib club according to Plan Sheet 4. Drill a horizontal in each end which is used to seize the jib sail.

Stop chocks: There are two stop chocks at the center of the jib club. These hold the jib sheet. The chocks are similar to chocks on the mast. Refer back to Figure 7-9.

Eyebolts: Fit an eyebolt in the aft end of the jib club. The eyebolt is for hooking the jib club topping lift (and anchor tackle).

Installation: The jib club will be installed along with the sail discussed in a later stage. If sails are not used on the model, the jib club could be omitted altogether. This will be discussed later.

STAGE 8: GENERAL RIGGING INFORMATION

Newcomers to the nautical world should learn the following rigging terms used on the plans and in instructions. Only those terms applicable to this model are mentioned. For more nautical terms refer to the books in the bibliography.

Sail terms: Each edge and corner of a sail has a name. On a fore and aft sail, the top is the head, bottom the foot, aft side the leech, and forward side the luff. The lower forward corner is the tack, aft lower corner the clew, upper forward corner the throat, and the aft upper corner the peak. A triangular sail is similar, but the upper corner is called the head. It has no throat or peak.

Standing rigging: Fixed rigging supporting masts and yards. Generally, standing rigging is tarred; hence, it is black or dark brown.

Shrouds: Transverse lines supporting the masts. Deadeyes are wood and have three holes for reeving the lanyards (lines used to tighten shrouds, stays, and other lines).

Chain plates: Iron bars or rods holding shroud deadeyes along the hull.

Footropes: Lines on spars on which seamen stand while working and furling sails.

Stays: Lines supporting the masts from fore and aft forces.

Bobstays: Support the bowsprit from upward loads. Bowsprit shrouds, or guys support the bowsprit from side forces.

Running rigging: Lines that move, reeve (go) through blocks, or operate sails and spars.

Blocks: Wooden or metal shells with sheaves (pulleys) for handling lines. A purchase (tackle) consists of several blocks and a line to provide a mechanical advantage for handling sails and spars. Jig tackle is a term describing a tackle at the deck end of a rig.

Halliards or halyards: Lines for raising and lowering a sail, boom, gaff, or flag. For gaffs, the outer halliard is the peak halliard. At the gaff jaws is a throat halliard, named for the part of the sail it operates. Down-hauls, outhauls, and inhauls drag a sail along a boom or up and down a stay.

Sheets: Lines holding the lower corners of a sail or boom. When not in use, sails are furled (bundled on the booms).

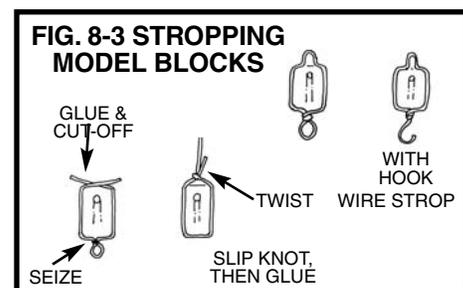
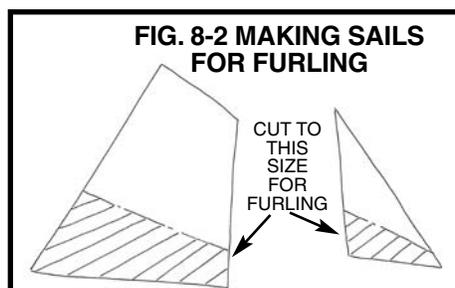
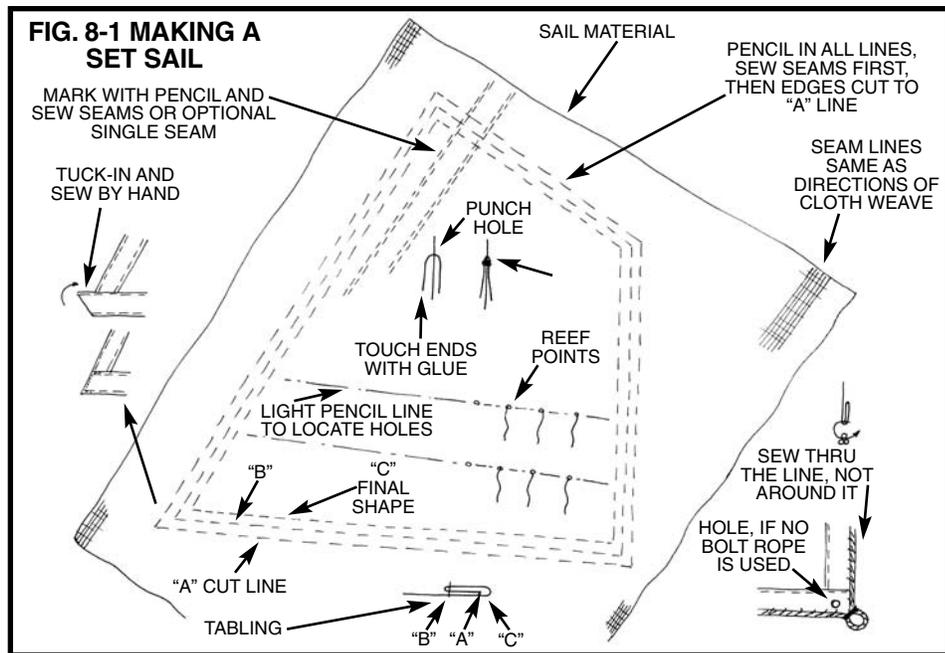
Reef bands: Horizontal reinforcing bands on a sail. They have short lengths of rope called reef points. In heavy weather, sailors tie the reef points to the boom to shorten the sail.

Parrels or parrals: Line holding gaffs and booms to their respective masts.

Toppling lift: Line holding up the end of a boom when the gaff is down or absent.

1. Rigging Scheme

As a schooner, Glad Tidings is an ideal model for adding a full set of sails. Or, a set of furled sails also looks nice. Of course,



you can omit sails altogether and this will be discussed in later stages.

SEQ CHAPTER 12. Sailmaking

Material: Choosing the proper material is critical. Sailcloth must be lightweight, yet fairly opaque. Tightly woven cotton is acceptable and available from Model Expo. Since this is a fairly large scale model, heavier linen could also be used. You can usually find this material in fabric shops.

Sewing Aids: Visit a fabric shop and purchase a bottle of Fray-Chek. Running or brushing it along the edge of the cloth prevents the material from unraveling when cut and produces a sharp edge. Apply it to the sail before rolling the hem.

Stitch-Witchery and Wonder-Under are basically the same product. They are heat fusible bonding tapes. Stitch-Witchery comes in a roll and is bond sensitive on both sides. Wonder-Under comes in sheets with a thin, paper backing on one side. To join two pieces, simply place a strip between them and iron. Use Wonder-Under for hemming the sail if sewing it is too difficult.

Preparation and sewing: Wash sailcloth several times to pre-shrink it. When dry, iron the cloth, but be careful not to scorch

it. Next, lightly draw the seams and hem (tabling) lines in pencil, then sew the seams using light tan cotton thread. A sewing machine makes fast work of the project. Practice on scrap cloth. Balance the needle thread tension so it doesn't pucker the material. No reinforcement patches are required. Instead, simply stitch lines to represent corner reinforcements, reef bands, etc. If sewing a double seam, be sure the two lines are parallel. Those who lack the Betsy Ross touch can substitute a single seam. Figure 8-1 shows the mainsail layout.

When done, iron the sails. Be careful not to burn them. Next, cut the sail shape using Line A in Figure 8-1. Fold the hem, iron it flat, and sew as close to Line B as possible. Tuck the ends and hand-stitch the corners. The sail is now ready for stretching.

Stretching the Sails: This step assures the sail's proper shape, since sewing may have altered it. Using the original pattern, trace the sail's outline onto a piece of paper. Place the paper on a solid, but porous backing, such as a wood or cork board. Now wash the sail again and lay it over the outline. Stretch the wet material to the sail's outline, then secure with stick pins through its outer edges. When dry, the sail will have resumed its proper shape. Iron it one more time.

Boltropes: Although boltropes can be omitted, they add quite a bit to a model the size of Glad Tidings. Figure 8-1 shows the process.

Reef points: Install reef points along the reef bands as shown in Figure 8-1.

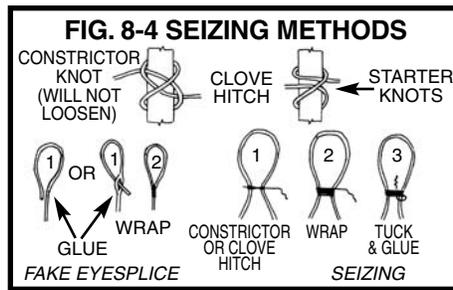
Bonnet lacing: It just so happens that Glad Tidings has a bonnet on the jib. This is basically an extension of the jib and is secured to the jib with a quick-release lacing. Plan Sheet 5 shows a detail of the lacing, but for the model a simple stitch can be used to fake the lacing.

Furled Sails: Don't furl sails made from sailcloth and cut to the original's scale size. The material is usually too heavy, resulting in a bulky furled sail. To solve this problem, either proportionally reduce the size of a sail by one-third when using sailcloth (Figure 8-2, or buy a lighter material such as Silkspan (model airplane covering tissue). This material is available from Model Expo. Depending on their size, even Silkspan sails may require being reduced by one-third. Test the percentage reduction to determine how much material is needed for a neat, tight furl.

Even furled sails need some seams and hems, as these details are visible.

3. Blocks

Sometimes, commercial blocks supplied in kits do not have fully rounded tops and

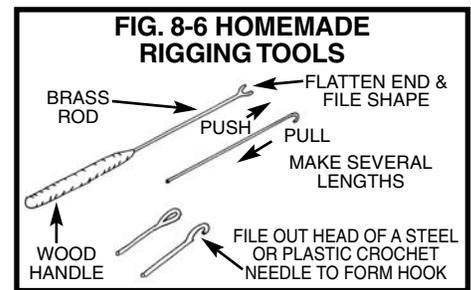
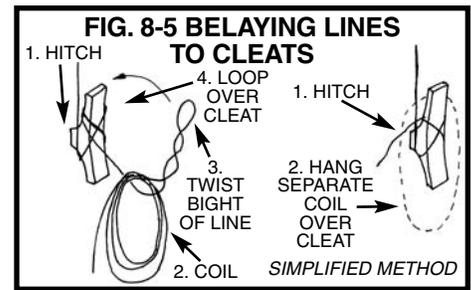


bottoms. To make them look better, round the ends with a needle file. Also, use a small drill bit or reamer and clean out and enlarge the sheave holes so lines reeve easier. Plan Sheet 4 shows the real boat details for block stropping and seizing to eyebolts and other fixtures. Notice there are several options you can use. Figure 8-3 illustrates some model stropping methods to simplify the work.

4. Lines

Beeswax: Protects lines against moisture and lays down fuzz. To soften beeswax, hold it to a light bulb. Run the line across the beeswax, then through your fingers to soften and smooth it. Do this several times to coat the line thoroughly.

Seizings: Seize lines with the supplied polyester thread, then touch with diluted white glue or thin super glue (Figure 8-4).



Belaying Lines: Locations for belaying lines are shown on the belaying plan on Plan Sheet 5. All lines belay to cleats on this model. Figure 8-5 shows how to belay lines and add a coil of rope.

5. Rigging Tools

Some homemade tools are useful for the rigging process (Figure 8-6). Similar shapes are commercially available from Model Expo.

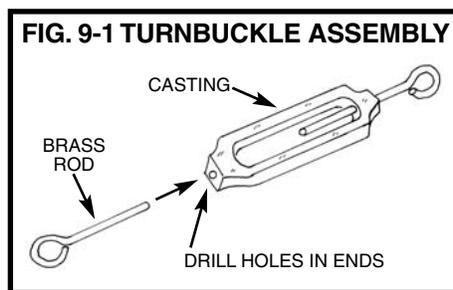
STAGE 9: INSTALLING STANDING RIGGING

Note: As noted on the plans, the standing rigging is galvanized iron wire on the real boat, but for the kit black nylon line is supplied. The size is the same as the wire would be. You could substitute real wire by twisting your own, or better yet, use commercial stranded stainless steel wire sold as control line wire for model airplanes. This wire is nice, but difficult to work as it is very stiff. Non-stranded wire is also available in small diameters.

The standing rigging is shown on Plan Sheet 5. Before starting, sort lines by size, coat with beeswax, and keep them handy. For seizings, use the polyester thread in the kit. It is prewaxed and doesn't require beeswax, but double duty won't hurt. Keep white glue and super glue ready for dabbing on a seizing if necessary. Usually, sewing through a line followed by a half hitch prevents the seizing from unraveling.

1. Turnbuckles

Before starting the rig, make the four turnbuckles for the bobstays and bowsprit shrouds. The body of the turnbuckles are britannia castings. Drill a hole in each end of the fitting and use brass wire for the eyes and screws. Details are shown on Plan Sheet 4 and Figure 9-1.



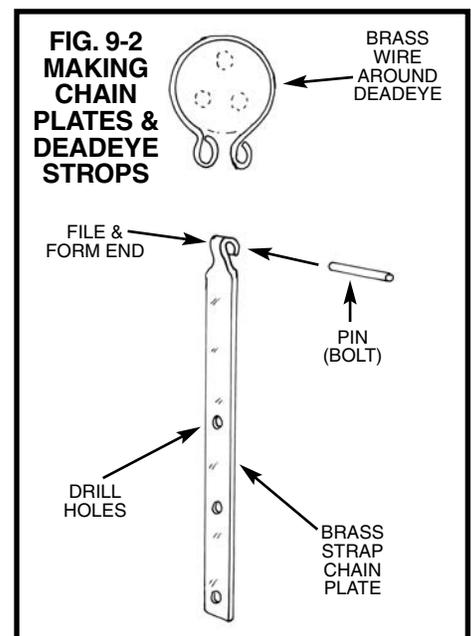
2. Shrouds

Note: Before rigging, make sure all mast hoops are placed on their masts.

Chain plates: Make the chain plates from 1/64" x 3/32" brass flat bar. Deadeyes are 3/16" diameter. Make deadeye strops from brass wire. Details are shown on Plan Sheet 4 and Figure 9-2.

Chain plate installation: Locate the chain plates as shown on Plan Sheet 5. However, tie a piece of rigging around the masthead where the shrouds fit and stretch it down where the chain plates will be located. Use the line as a guide for aligning the chain plates at the proper angle.

Installing the shrouds: Install the forward starboard pair first, followed by the forward port pair. The main shroud is single on each side and eyespliced together around



the mast. To set up the shrouds, make a temporary brass wire fixture to space the deadeyes as seizing progresses (Figure 9-3). The fixture should be longer than the final spacing of deadeyes. Reeving the lanyards will tighten the shrouds to their final proper spacing. Make a test shroud first to see how much it stretches.

The bitter ends of the shrouds set up on the right side of the shroud looking inboard. There are three seizings. On the real boat, the seizings could be line or wire, or could have been a wire rope clamp. For the model use the polyester thread or the smallest black nylon rigging cord. Seize the brass sheer pole above the top set of deadeyes at the foremast.

Figure 9-3 also shows the sequence for reeving lanyards. When looking outboard at any deadeye, always start with a knot in the upper left-hand deadeye hole. Consequently, port deadeyes have the knot aft and starboard deadeyes have it forward. Keep an eye on the masts. Rigging the shrouds can pull them out of alignment.

Note: The deadeye lanyards could be considered running rigging. However, they were most likely coated since they remained in position. On the model, use the black line for the lanyards. Actually, a darker line looks better along with the dark shrouds.

3. Spring Stay

The spring stay fits between the fore and main mast head shoulders. Eyesplice both ends as shown on the plans.

4. Jib Stay and Inner Bobstay

The jib stay and inner bobstay are actually connected together below the bowsprit.

Bobstay stem plates: Make the bobstay plates from 1/64" x 3/32" brass flat bar. They are secured to the hull stem with pins or nails. Details are shown in Detail 3-B on Plan Sheet 3.

Jib stay: Eyesplice the jib stay around the masthead shoulder on the foremast, then pass the stay through the hole in the bowsprit between the two eye bands. Eyesplice the end and connect it to a turnbuckle with a shackle.

Inner bobstay: Eyesplice both ends of the inner bobstay. Connect the lower end to the bobstay plate on the stem with a link or shackle, and the upper end to the turnbuckle on the end of the jibstay with a shackle.

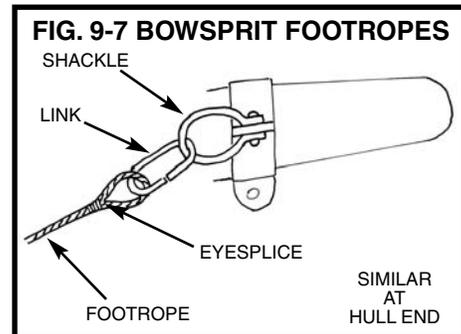
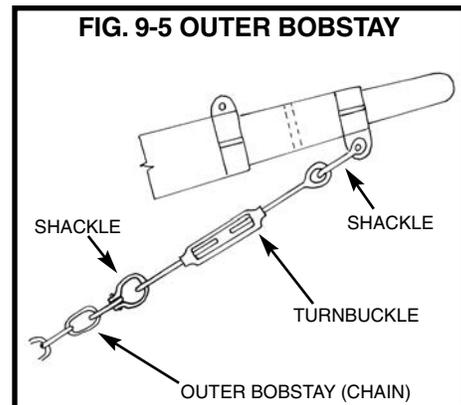
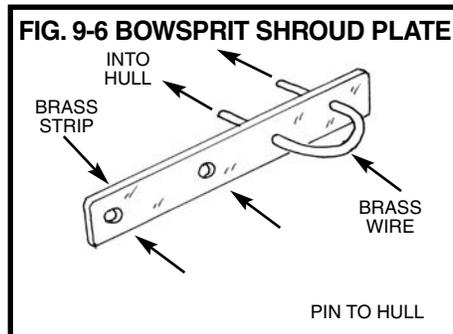
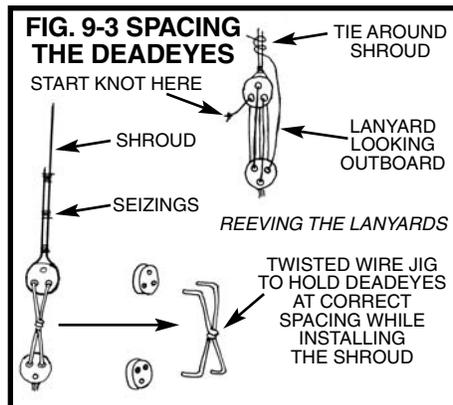


Figure 9-4 illustrates the above rig at the end of the bowsprit.

5. Outer Bobstay

Bobstay stem plates: The plates are similar to the inner bobstay plate as noted in the paragraph above.

Outer bobstay: The bobstay is 27 links per inch chain provided in the kit. First, connect a turnbuckle with a shackle to the forward eye band on the bowsprit. Connect the chain to the other end of the turnbuckle with a shackle, and the lower end to the stem plate with a shackle (Figure 9-5).

6. Bowsprit Shrouds

Bowsprit shroud plates: Make the shroud plates from 1/64" x 3/32" brass flat bar and the eye from brass wire. Pin or nail to the hull, port and starboard. Details are shown in Detail 3-C on Plan Sheet 3 and Figure 9-6.

Bowsprit shrouds: Shackle a turnbuckle on each side of the bowsprit to the inboard

bowsprit eye band. Eyesplice the shrouds on both ends. Connect the outer ends with a shackle to the turnbuckles, and the inner end with a shackle to the shroud plates on the hull. Shackles are not supplied. Shackles can be made from small diameter wire solder. Flatten the ends of a short piece of solder, shape round and drill a hole in the ends. Bend around an appropriate round to shape.

7. Bowsprit Footropes

Hull eyebolt: Fit an eyebolt in the hull, port and starboard, in the location shown on Plan Sheet 5.

Footropes: Eyesplice both ends of the footropes. Connect the outer ends to the sides of the forward bowsprit eye band with a shackle and link. Connect the inner ends to the hull eyebolts with a shackle and link (Figure 9-7). The link provides more flexibility to the footropes.

STAGE 10: INSTALLING RUNNING RIGGING

A schooner, especially a relatively small boat like Glad Tidings looks great with a full set of sails. If you are new to sailmaking, this is an ideal model to start with. Sails as well as all the running rigging are about as simple as it gets. In any case, decide whether to rig with or without sails, or with furled sails. The following discusses the choices and how to rig them.

Use tan line for all running rigging. The running rigging is shown on Plan Sheet 5. Double scale views are included to provide close-up details. Before starting, sort lines

by size, coat with beeswax, and keep them handy. For seizings, use the polyester thread in the kit. It is prewaxed and doesn't require beeswax, but double duty won't hurt. Keep white glue and super glue ready for dabbing on a seizing if necessary. Usually, sewing through a line followed by a half hitch prevents the seizing from unraveling.

1. Foresail

You should have the sail all sewn, ironed so it is wrinkle free, and have all reef points installed. Seize the corners of the sail and lace the sail to the boom and gaff (Figure

10-1). Rig as much of the sail off the model as possible. Leave enough line for reeving, handling, and belaying. Don't be in a hurry to snip lines flush. They may need retensioning as rigging progresses.

Install the gaff and boom on the mast. Use temporary lines to hold them in place. The gaff is fixed to the mast by a rope parrel in the gaff jaws. The boom is fixed by the gooseneck. Fit the gooseneck pin on the boom into the hole in the mast band.

Throat and peak halliards: Reeve the throat and peak halliards (Figure 10-2). For

now, do not belay the lines; just temporarily tie them off. All lines will be tightened when all are reeved.

Mast hoops: Sew the mast hoops to the sail in the locations shown on Plan Sheet 5 and the detail on Sheet 4.

Boom topping lift: Rig the topping lift. Fit the hook into the eyebolt at the aft end of the boom. Hook the upper block to the eyebolt in the mainmast (Figure 10-3). Again, just tie off the line at this time.

Fore boom sheet: Rig the sheet. Fit a split ring made from brass wire on the upper block and around the bail on the boom sheet fitting. The bottom block hooks to the eyebolt in the deck. Note that the sheet belays to the forward centerline cleat on the mainmast but first goes under the thumb cleat below the full cleat (Figure 10-4).

Completing the rig: Now that all lines are rigged, tighten all up and belay the lines to the cleats as shown by the belaying plan on Plan Sheet 5. Belay the sheet first as this positions the boom, then the topping lift. The boom is now secured. Finally, tighten the peak and throat halliards. Make sure you tension the two halliards together so the gaff will not put any wrinkles in the sail. Refer back to Stage 8 for belaying lines and adding a rope coil.

Rigging without a sail: The boom sheet and topping lift will be identical to the rig with the sail. The mast hoops just sit in a pile on the mast. The gaff should be lowered as low as the pile of mast hoops permit and sit about parallel to the boom. This lengthens the throat and peak halliards, so more line is required to complete the run to the cleats. To keep the gaff from flopping sideways on the model, tie down the ends of the gaff to the boom.

Option: A lot of model builders like to leave the gaff in the raised position even though no sail is fitted. If that's your thing, do so. However, this particular rig has no vang at the gaff end, so it would flop sideways on the model in a raised position. You can fix this by gluing the gaff jaws to the mast, or drill a hole through one side of the gaff jaw and pin it to the mast.

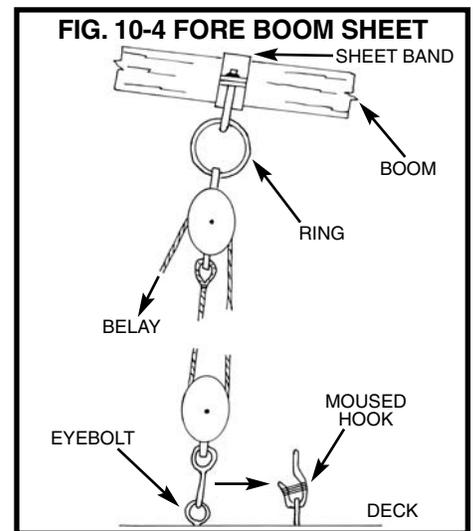
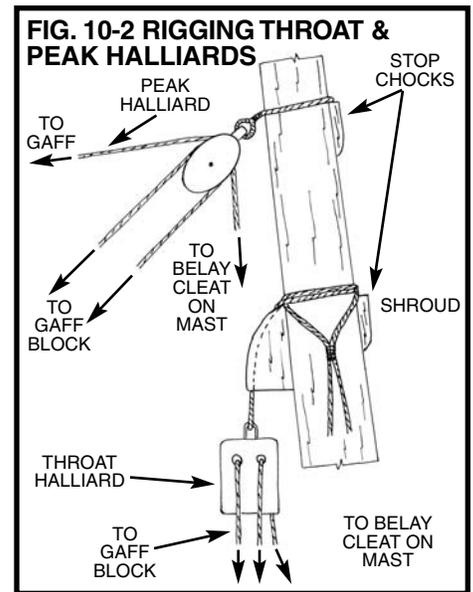
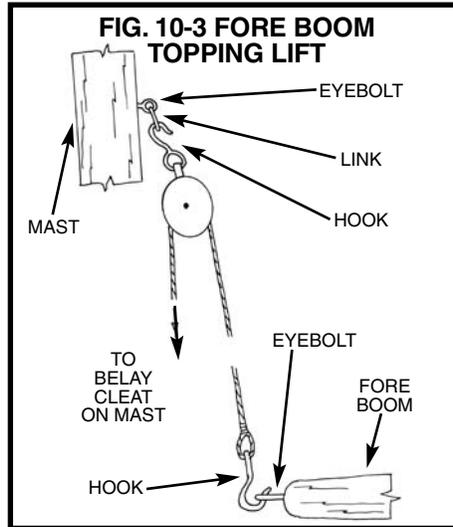
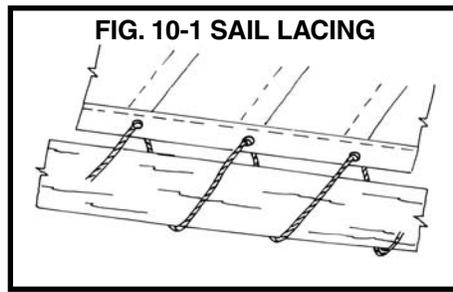
Rigging with a furled sail: As noted earlier in Stage 8, you need to reduce the bulk of the material or use silkspan for a furled sail.

2. Mainsail

The mainsail is rigged similar to the foresail with the following differences:

Clew outhaul tackle: When installing the sail, attach the traveler ring to the clew of the sail. Attach the outhaul line to the clew, then reeve the line through the hole or sheave in the boom end, then to the tackle. The tackle belays to the cleat on the port side of the boom (Figure 10-5).

If no sail is used, leave the traveler ring loose



on the boom. Rig the outhaul tackle, except instead of it attaching to the sail, knot it off at the hole in the boom.

Boom jaws: The main boom has jaws rather than a gooseneck and sits on the mast boom jaw rest. Fit the jaws with a rope parrel around the mast.

Boom topping lift: Simply a different run from the fore boom. The lift goes through the cheek block atop the mainmast.

Boom sheet: The boom sheet takes off the bottom block and goes directly to either the port or starboard cleat in the cockpit. Also, the rig has another traveler ring at the deck around the main sheet horse.

3. Jib

The jib has a bonnet but no reef points. Details of the bonnet are discussed in Stage 8.

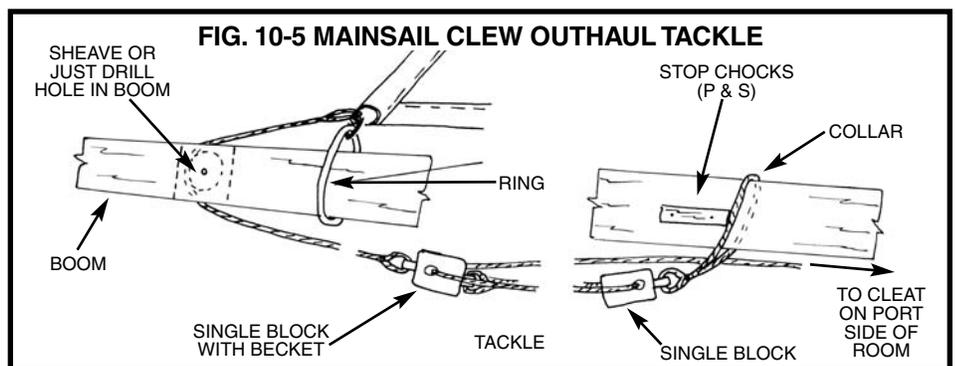
Jib sheet and jib club: Seize the corners of the sail to the holes in the club, then lace the club to the sail. The lower block of the sheet has a traveler ring around the jib sheet

horse. Similar to the fore sheet, the sheet is hooked under the thumb cleat on the mast before it belays to the double ended cleat.

Halliard: Rig the halliard and tie it off temporarily.

Hanks: Use the brass split rings for hanks, and secure the hanks to the sail around the jib stay in the locations shown on Plan Sheet 5. Pre-punch all the holes for the hanks (Figure 10-6).

Downhaul and tack: Secure the tack of the sail to the eye band on the bowsprit and



add the fairlead for the jib downhaul. Run the downhaul through one or two hanks, then through the fairlead at the tack (Figure 10-7).

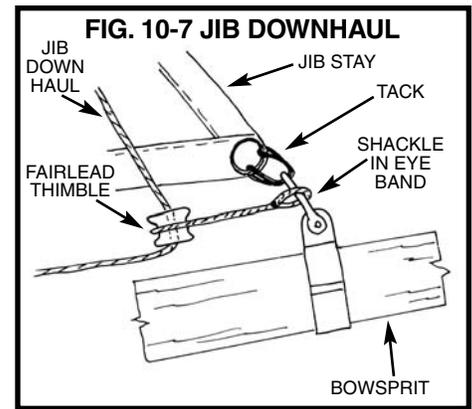
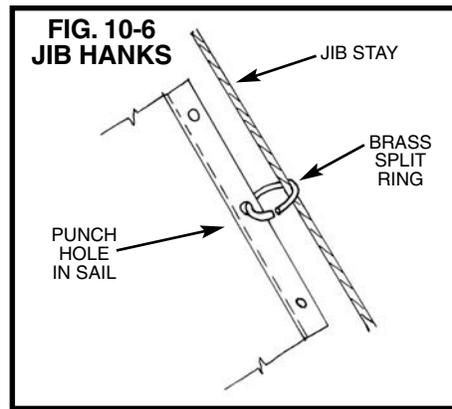
Topping lift: The topping lift for the jib club also functions as the anchor tackle. Fit the hook into the eyebolt on the club. The upper block hooks to the eyebolt at the fore masthead (Figure 10-13).

Completing the rig: Now that all lines are rigged, tighten all up and belay the lines to the cleats as shown by the belaying plan on Plan Sheet 5. Refer back to Stage 8 for belaying lines and adding a rope coil.

Rigging without a sail: The more lines left without sails the more detail you have on the model. With the sail gone, connect the halliard and the downhaul together and set the lower halliard block down near the bowsprit (Figure 10-8).

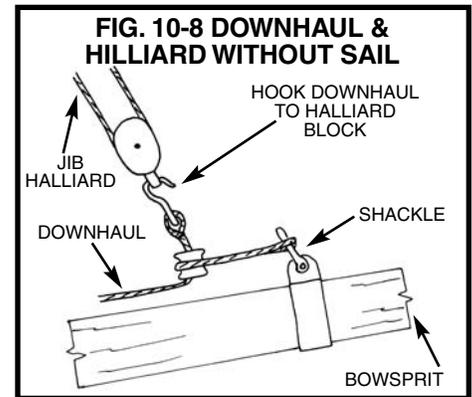
Take the lower hook of the topping lift and hook it to the thumb cleat on the forward side of the mast. Or, since the topping lift is also an anchor tackle, you could hook it at one of the anchors.

The club and sheet most likely would be removed along with the sail itself. However,



it is possible that the sheet is in place and the club just lies on deck in back of the horse. This would add detail, but may look too cluttered. Your option.

Rigging with a furled sail: As noted earlier in Stage 8, you need to reduce the bulk of the material or use silkspan for a furled sail. The topping lift is important here. Keep it hooked to the jib club to keep the sail off the deck. The outer end of the jib is furled on top of the bowsprit and held by the gaskets (see paragraph 4 below).



FINAL TOUCHES

When the model is rigged, recheck every line. Be certain seizings are sound. Add another dab of glue if they aren't. Touch up shiny spots on standing rigging with black paint or liquid shoe polish. Use a tan stain or brown liquid shoe polish for running rigging. Check if any painted wooden parts

were fouled during the rigging process and make repairs.

CONGRATULATIONS

Your *Glad Tidings* is finished! Take a moment to revel in your accomplishment. You've persevered when the going became

rough and your effort has produced results. You've developed skills you never knew you had, increased your vocabulary, and become a time traveler. We hope you've enjoyed your voyage and look forward to sailing with you on your next shipmodeling project.

BIBLIOGRAPHY

The American Fishing Schooners: 1825-1935

by Howard I. Chapelle. New York: W.W.Norton & Co. Inc., 1973

Great book on schooner development. Excellent chapter with plans of Pinky schooners. The appendix contains hundreds of Chapelle's sketches of schooner rigging and hull details.

Boatbuilding: A Complete Handbook of Wooden Boat Construction

by Howard I. Chapelle. New York: W.W.Norton & Co. Inc., 1941

Excellent book on small boat construction. Appropriate for the Pinky, as it was written in the time frame of *Glad Tidings*.

American Small Sailing Craft: Their Design, Development, and Construction

by Howard I. Chapelle. New York:

W.W.Norton & Co. Inc., 1951

Source book of small craft plans and history. Not a whole lot on the Pinky but gives an insight into the various small boat developments and construction.

The Ashley Book of Knots

by Clifford Ashley. New York: Doubleday & Co., 1944.

The best book ever written on the thousands of knots used aboard old sailing ships and boats. Outstanding illustrations.

The following model building publications are especially useful for beginning ship model builders:

How to Build First Rate Ship Models from Kits

by Ben Lankford. Hollywood, FL: Model Shipways, Inc., 2000.

A book designed especially for the kit builder. Covers all facets of building models from kits, and features Model Shipways kits

as well as others. The Appendix has a wealth of nautical terms defined, especially useful for the beginner.

Planking the Built-Up Ship Model

by Jim Roberts. Hollywood, FL: Model Shipways, Inc., 1987.

Topnotch publication on how to plank ships from all periods. Designed to help the kit builder if the plans don't show a planking scheme.

Ship Modeler's Shop Notes

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Valuable collection of shop hints and articles extracted from early issues of the Nautical Research Journal. Many quality illustrations, tables, and techniques. A second edition of the Notes is in preparation at time of this writing.