

CHAPTER 6:

MAKING A FIGHTER

Local kite shops should be able to satisfy your fighter kite needs. But at some point you may wish to try your hand at making your own. There are hundreds of great designs out there. In Chapter Six, we're going to show you one of them.

These instructions detail how to make a fabric fighter. It goes without saying that you can make the same kite from plastic or paper and use adhesive tape instead of sewing. Such simple kites are both cheaper and faster. And they fly great!

Something more important, however, is that paper and plastic kites provide you with the opportunity to experiment with designs. You can make changes, or if a design isn't successful, you can simply throw the sail away and start over.

Don't rule out paper or plastic kites. The great majority of fliers around the world fly them.

Materials

- Sail: 18" square of crisp ripstop nylon, or
18" square of soft cloth-like Tyvek paper
- Cross Spar: 3/32" diameter x 36" long flexible fiberglass rod
- Center Spine: 4 1/8" x 1/4" x 20" pine or cedar rod, or
1/4" x 20" bamboo strip, or
1/4" x 20" wood dowel
- Bridle: 4-5' of 20 pound test woven Dacron line
- Pockets & Casings: 1 1/4" x 18" of stiff nylon tape or fabric

Construction Steps

Bend the Spine: Earlier we talked about the importance of bending the center spine. A bow of around fifteen degrees is usually enough to provide the slight head-to-tail dihedral that you need for stability and control in light winds.

Place the arch or angle about four inches from the end of the spine. This will put it between the nose and the cross spar connection point.

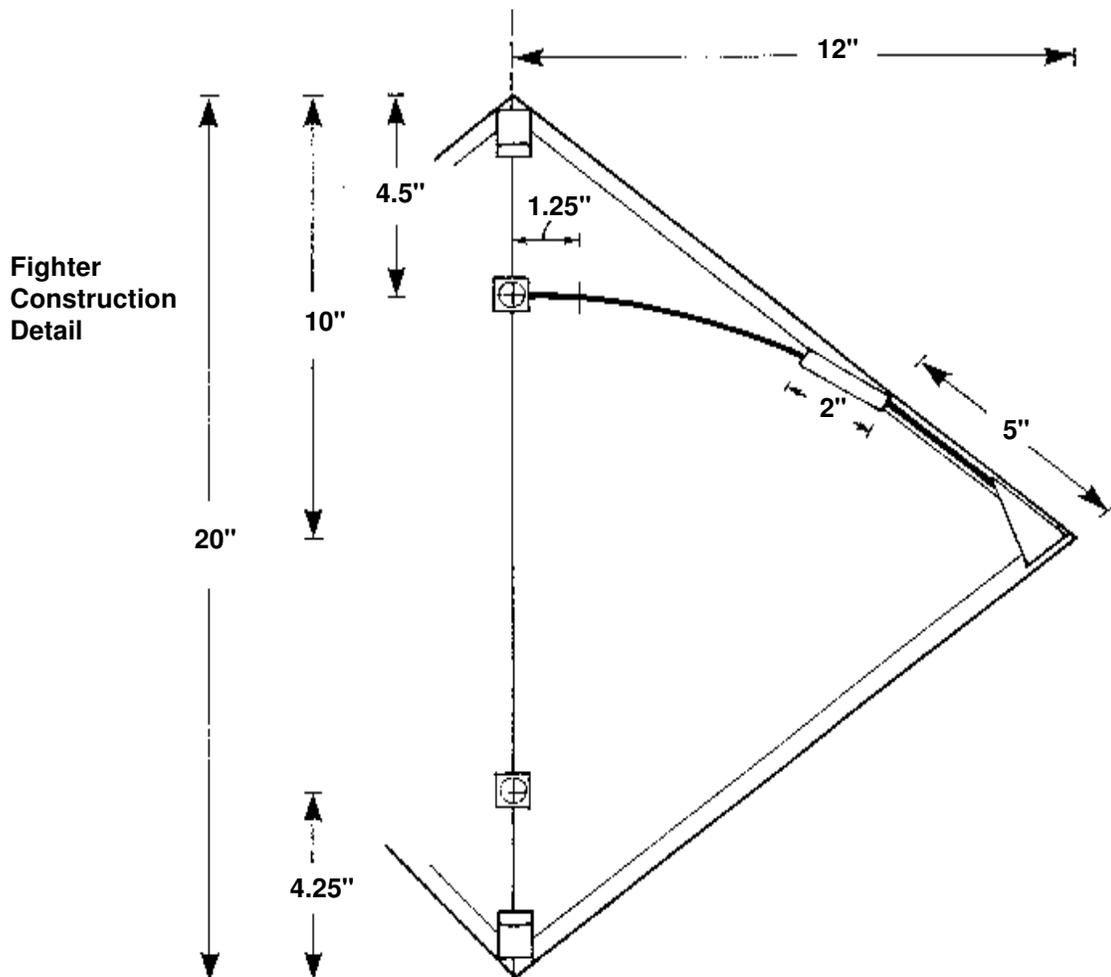
Hold the spine over a concentrated steam source and slowly begin to shape it. Remember to be careful. Steam is hot! We explained how to do this in the last chapter so you might want to go back for a quick review.

After the spine has cooled, check it again for shaping.

The true hard core finatics continue to prefer a bamboo spine because of its natural, "built-in" energy and its ability to take punishment without breaking. Fiberglass just doesn't have enough "soul" for a good spine. Some fliers are starting to laminate woods together with bamboo for a stronger and more durable spine.

Ric Merry
Seattle, Washington

For a really first class spine, you may want to try laminating a piece of spruce or cedar to a strip of bamboo. Cut small slices across the wood so it will bend more easily. Then shape the spine and glue it to the bamboo. The result will be a good looking spine which is both stronger and stiffer.

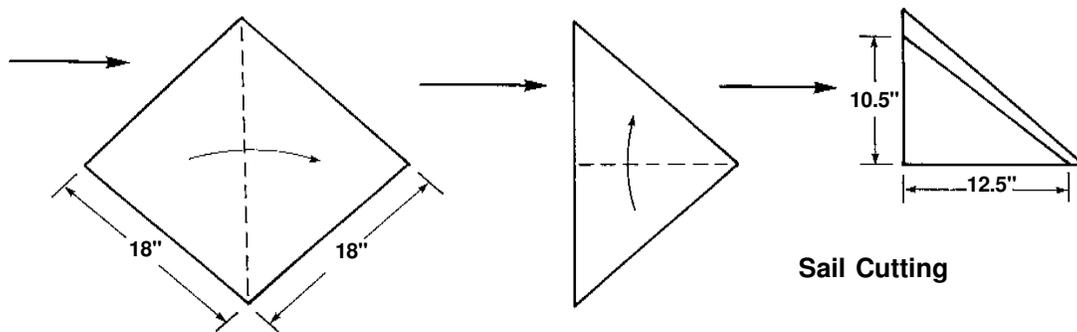


Fold, Cut, and Hem Sail: The finished sail is actually wider than it is tall. Since balance is extremely important, the easiest way to cut the sail is to fold it and then make all cuts at one time.

Fold your sail material in half diagonally. Then fold it again into quarters.

Mark one folded edge 10 1/2 inches from the center corner. Mark the other edge 12 1/2 inches from the corner.

Now, using a straight metal edge and a sharp knife or hot-cutter, slice through all four layers with a single cut.



Unfold the sail and sew a 1/4 inch hem around all four sides. While the center fold is still visible, mark the points for bridle attachments. The two-point bridle will be connected 4 1/2 inches from the nose, and 4 1/4 inches from the tail.

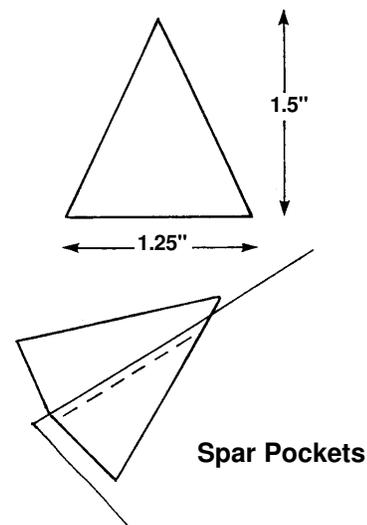
This is a good time to add any decoration or applique art to the sail.

Attach Spar Pockets and Casings: The cross spar is connected by pockets at the outside corners of the fighter, and by casings which help hold it in place and maintain a proper flex. Remember to put them on the back of the sail.

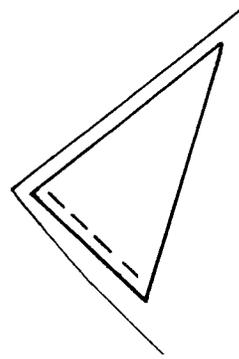
Since these fittings will absorb most of the stresses on the kite, it is important to make them of strong, tightly woven material, and to sew them securely in place. Use a hot knife to cut the fabric or carefully seal the edges near an open flame to prevent fraying later.

Cut two triangular spar tip pockets. These triangles should be 1 1/4 inches wide and 1 1/2 inches tall.

Stitch the center of each pocket triangle to the outside edges of the sail. Triangles should be "pointing" toward the nose of the kite. (Remember that the sail is wider than it is tall. Don't put the spar pockets on the nose and tail by mistake!)



Now fold the triangle in half and sew the two open edges together. This is an important stress point on the kite so you should use several layers of stitches.



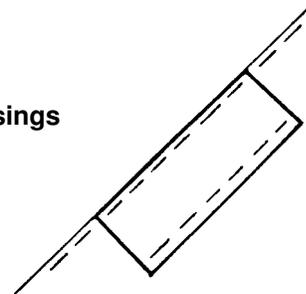
Sew the Spar Pocket Closed

Spar casings should be attached next.

Cut two casing rectangles of fabric, 2 inches long and 3/4 inch wide.

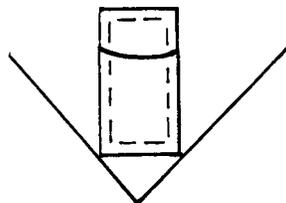
Attach these casings along the leading edge, 5 inches from the outside corners of the kite. Use two rows of stitches so that later, the spar can be inserted through the casing.

Spar Casings



Placed between the Spar Pockets and the Nose

Attach Spine Pockets: Spine pockets are quite similar to the spar pockets and casings.



Open Ends Facing Center of Kite

Cut two pocket rectangles of fabric, 2 inches long and 3/4 inch wide.

Fold the rectangle so that the top edge is 1/4 inch below the bottom edge. Place the fold in the nose or tail of the kite and stitch around the other three edges so that pockets are created with the open ends

facing toward each other.

Insert Spar and Spine: As we said before, the spar and spine are attached to the sail using the pockets and casings.

Insert the top of the spine into the pocket at the nose of the kite. (Remember that the top of the spine is the end that has been bowed.) Now insert the bottom of the spine into the pocket at the tail of the kite. To do this, you may need to carefully arch the spine. Place the nose on the ground and carefully put pressure on the spine to bend it out and away from the sail. You should now be able to slide the spine into the tail pocket.

Slide the end of the flexible cross spar under the spine and through both of the casings. Then insert the ends into the outside corner pockets. Note that the center of the spar is located at the upper bridle point. When we attach the

bridle line, this cross point will be secured with a knot.

With the spar and spine attached, the fighter's sail should be stretched smooth and

tau. If the spar is too long, some minor trimming may be required.

To make your kite much more compact for storage or traveling, you can cut the long, flexible cross spar in half and connect a one inch ferrule to one end. Remember to cut the spar exactly in half to maintain overall balance.

Use brass tubing from a model shop. Glue the ferrule to one of the center-facing ends of the spar. The other half slips into place for assembly and is held captive by the tension of the kite.

Bud Koger

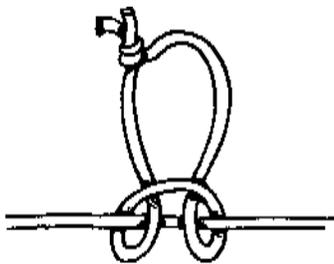
Bellevue, Washington

Attach Two-Leg Bridle: The ends of a two-leg bridle are passed through the front of the sail and tied directly to the center spine. You should have already marked the connection points, 4 1/2 inches from the nose, and 4 1/4 inches from the tail. An embroidery needle makes the job easier.

For a more durable kite, sew small pieces of reinforcing fabric to the sail at these bridle points. Adhesive ripstop tape also works well.

The total length of the bridle is 30 inches. The upper leg of the bridle will be tied around both the spine and cross spar.

You can improve the strength of your knots and prevent fraying by dabbing each of them with a drop of Super Glue. Just remember not to glue any movable knots that you may need to adjust later.



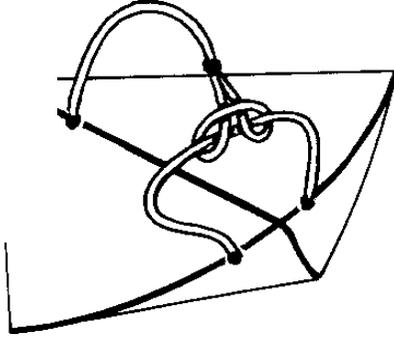
To finish off the bridle, take a separate piece of line about 4 inches long and tie it into a loop. Attach the loop to the bridle with a larkshead knot. We call this loop a movable tow-point. Back in Chapter Five, we explained how to make this tow-point loop and adjust it for maximum

performance.

Optional Three-Leg Bridle: A three point bridle will improve the stability of your fighter and allow you to adjust balance more effectively. The three-leg bridle is made from a 16 inch Main Line and a 12 inch "Yoke" Line.

Measure 1 1/4 inches out on each side of your top bridle point. That's the point, 4 1/2 inches from the nose, that we marked earlier. Pass the ends of the Yoke Line through the front of the sail at these two new bridle points and

tie them to the cross spar.



Tie a two inch loop in one end of the Main Line. Attach this end of the Main Line to the Yoke Line using a larkshead knot. We will call this sliding knot the “Yoke Point”.

Pass the other end of the Main Line through the front of the sail at the bottom bridle point and tie it to the center spine. You can now adjust the balance of your fighter by moving the Yoke Point.

Heavy winds or regular flying may have a tendency to pull the ends of the Yoke Line closer together. This will throw the balance of the kite off and eventually will result in tears to your sail.

You can prevent this problem by adding “spreader bumps” to the cross spar where the Yoke Line attaches. Simply wrap several turns of thread or kite line around the spar, tie off the line, and then coat these “bumps” with glue.

Congratulations! Your kite is now finished.