

# Lashing INFORMATION



*The following text is by Adolph E. Peschke as presented in the 1998 printing of the 1993 edition of the Pioneering Merit Badge Pamphlet:*

We could imagine the first lashing made by man was wrapping a few strips of bark around a stone to hold it to a tree branch to make an ax to hunt and build with. Even today with all our modern ways to hold things together, it is still fascinating to lash sticks or spars together to make a camp gadget or useful structure.

There are still areas in the world where lashing spars (or bamboo poles) is the basic means of building structures. In Scouting, we use the same methods but have replaced strips of bark and vines with natural and synthetic fiber ropes.

The best choice of rope to use for lashing the type of pioneering projects (shown in this pamphlet) is pure manila rope. Therefore, all references to rope used for lashing in this section refer to manila rope.

Yet, sometimes we are faced with a problem—we have to use what is available and economical to get the job done. When making camp gadgets for temporary use, you could use lesser quality, less expensive rope or even binder twine for small projects.

## **SQUARE LASHINGS**

The basic type of lashing for most projects is some form of a square lashing. This lashing is used to join two spars together, usually at a right angle, but not always. For example, square lashings are used when building a trestle to join the ledger and header to the legs at right angles. But it is also used to hold the ends of the X bracing to the legs at an angle. (Refer to "Making a Trestle.")

In this section, three different square lashings are shown: (1) the traditional square lashing, (2) the modified square lashing, and (3) [the Japanese Mark II](#). All three types of square lashings accomplish the same thing by making three wraps and two frapping turns around the spars being held together.

## LASHING TERMS

No matter what kind of lashing you're making, there are two basic terms you should be familiar with: wraps and fraps. The basic difference between the two terms is that a wrap is made around the spars, while a frap is made around the rope itself.

**Wrap.** A *wrap* is a turn made around the two spars to hold the spars tightly together. Usually, three wraps are made to form a square lashing. Some other lashings require more wraps.

**Frap.** A *frap* is a turn made between the spars. It goes around the wraps to pull the wraps tighter. Usually two frapping turns are made on a lashing.

Good lashings are not made in a hurry. Each wrap must be made with a strain on the rope. Frapping turns should be pulled up as tightly as possible before the final knot is tied.

## ROPE LENGTH

When you set out to make a lashing, the size and length of the rope you need are among the first questions you have to answer. To determine the length of rope needed for a lashing, add the diameters (in inches) of the two spars at the point the lashing is being made. If one spar is 2-1/2 inches in diameter and the other is 3-1/2 inches in diameter, the total equals 6 inches. Multiply by 3 feet to get the length of the rope needed for lashing.

If you use a rope that is too short to make three wraps and two fraps for a lashing, you should add (splice or join with a square knot) a length of rope to complete the lashing with three full wraps and two fraps. For safety, don't leave the lashing short.

If you find you have extra rope, make more wraps or fraps to use up the rope to avoid cutting the rope or leaving long loose ends hanging out.

## ROPE DIAMETER

In most cases, 1/4"-diameter manila rope should take care of lashing two spars together as long as the combined diameter of both spars is 6" or less. When the combined diameter is over 6", use 3/8"-diameter rope.

## PIONEERING KIT

If your troop or camp puts together a [\*pioneering kit\*](#), it should contain lashing ropes that are cut to standard lengths: 10', 15', 20', 30', and 50'.

Both ends of these lashing ropes should be properly whipped. It also helps to color-code the ends of all ropes with a bit of paint to denote each length. When storing ropes, make sure they are dry and properly coiled. Never "hank" ropes for storage. That is, don't wrap them around your hand and elbow to form a coil. Tie each coil with a short piece of cord and store the coiled rope on pegs or in a ventilated storage box.\*

\* An approach that is seen as a practical way to preserve and organize your lashing ropes is to coil ropes of the same length into manageable groupings, i.e. a large coil containing more than a single rope, and then tying up the grouping at one end with a 3' light cord.

## TRADITIONAL SQUARE LASHING

In Scout Pioneering in the United States we most often see the square lashing started with a clove hitch. The clove hitch is tied on the vertical spar, just below where you want to join the crossing horizontal spar (see 1).

Using a clove hitch to start this lashing allows for two things. First, you can rest the crossing spar on the clove hitch to help support it as you begin the lashing while building your structure. Second, the clove hitch helps keep the structure from racking (twisting out of shape), causing the lashing to loosen as it is moved or hoisted into position.

After the clove hitch is tied, wrap the excess short end of the rope around the standing part of the rope (see 2). Hold the crossing spar up to the vertical spar and make three wraps around the spars using the long end (see 3, 4, and 5). Pull each wrap tight to hold the spars together. Make two frapping turns around the wraps

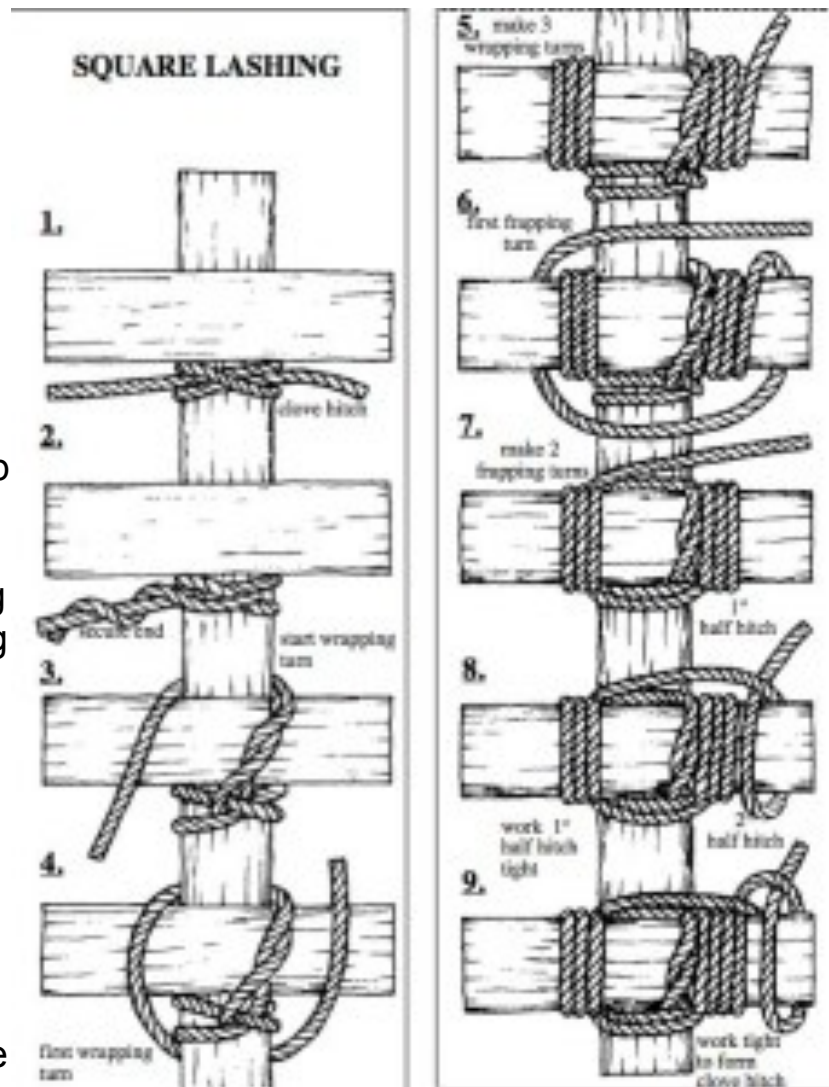
(between the spars) to pull the wraps tight (see 6 and 7) and finish with another clove hitch on the horizontal spar (see 8 and 9).

One other point to make about the square lashing is that you shouldn't be fooled by or limited by its name. Although two spars can be lashed together at 90° using a square lashing, it can also be used to lash two spars together at any angle. For example, a square lashing is used to lash the ends of two light spars to the uprights of a trestle to form the X bracing. A diagonal lashing is used at the center of the X to hold the crossed spars together.

## MODIFIED SQUARE LASHING

The modified square lashing was developed because of the difficulty usually experienced when tying a clove hitch to complete the traditional square lashing. The clove hitch that starts the lashing is easy enough to make, but tying a clove hitch at the end of the lashing is a different matter.

As shown in figure 104, the modified square lashing starts with a clove hitch. When tying the clove hitch, let the running end of the clove hitch extend about 12". Also do not twist the short end around the standing part of the rope as in the traditional square lashing.



After tying the starting clove hitch, proceed as usual using the long end of the rope to make three wraps (see figure 105). Then make two frapping turns (see figure 106).

To complete the lashing, bring up the short end of the rope that extends from the clove hitch and tie a square knot (see figure 107). Bring the short end up in the opposite direction of the frapping turns.

*As in the traditional square lashing, there is some disadvantage in having to make the complete lashing using the one end of the rope.*

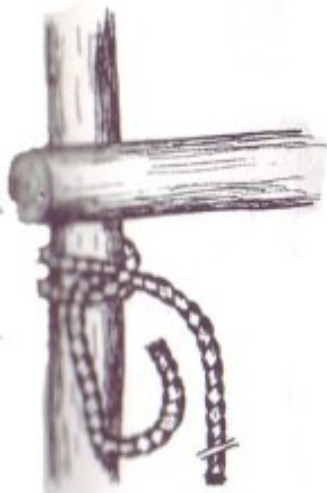


Figure 104



Figure 105



Figure 106

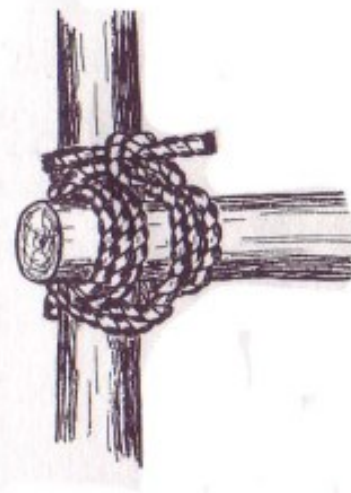


Figure 107

## JAPANESE MARK II SQUARE LASHING

The Japanese Mark II square lashing has found its way into Scouting in the United States through Wood Badge training in England, and because of the work of [John Thurman](#), camp chief of Gilwell. He observed it on one of his many world trips related to Wood Badge training.

This lashing is a straightforward approach to the task of lashing two spars together. Begin by placing the spars in the desired position. Now fold your lashing rope in half.

The midpoint of the rope is placed around the vertical spar and just under the crossing spar (see figure 108). Now work both ends of the rope at the same time to make three wraps around the spars (see figure 109).

After completing the three wraps, bring the two ends up between the spars in opposite directions to make the frapping turns around the wraps (see figure 110). Pull the frapping turns tight, and complete the lashing by tying the two ends with a square knot (see figure 111). It's that simple.

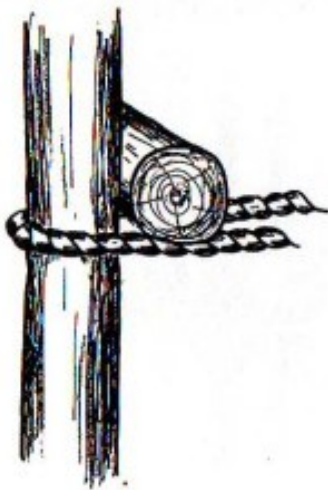


Figure 108

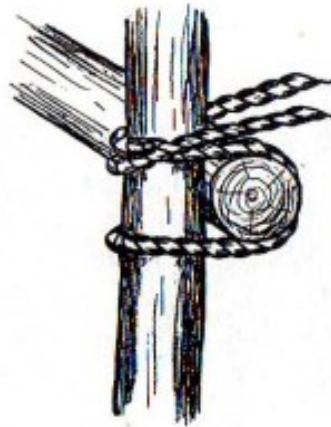


Figure 109

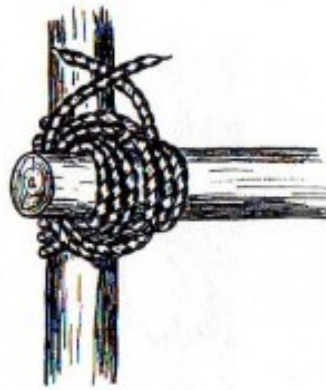


Figure 110

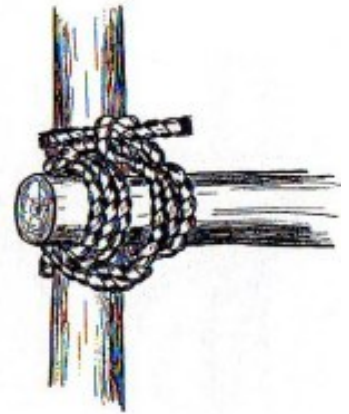


Figure 111

The advantage of this lashing is that you're working both ends of the rope at the same time. This makes it much quicker to tie since each hand has less rope to pull through. This lashing has the same holding effect as both the traditional and modified square lashings.

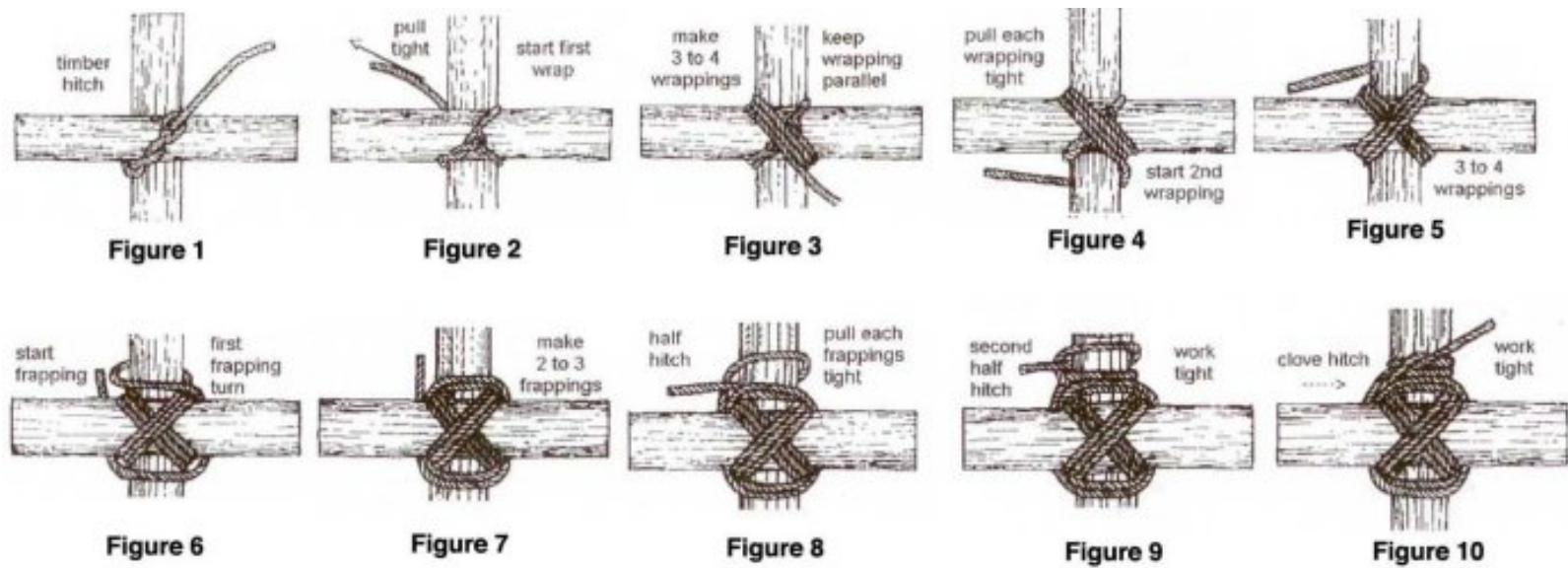
If more support is needed for the crossing spar, a clove hitch can be tied at the midpoint of the rope. Tie the clove hitch to the vertical spar just below the crossing spar. You can rest the crossing spar on the clove hitch as the lashing is being made. Then use both ends to complete the lashing as described above.

## DIAGONAL LASHING

When putting crossed braces on a structure to keep it from racking (as used when making a trestle), the most important lashing is the diagonal lashing where the spars cross. (Refer to the "[Making a Trestle](#)" section.)

When the cross spars are properly assembled on the trestle, they will be standing apart where they cross. That is, there will be a few inches of space between the spars where they cross at the center of the X. To pull them tightly together, a [timber hitch](#) is used to start the lashing (figure 1). As the timber hitch is pulled tight, the spars are sprung together. Next, three wraps are made in each direction across the X (figures 2 thru 5). After the wraps, make two frapping turns between the spars, pulling the wrapping turns tightly together and taking up any slack (figures 6 and 7). Finally, tie a clove hitch on one spar to complete the lashing (figures 8 thru 10). When this lashing is added to the cross braces, it helps keep the trestle from racking.

(Diagram on following page)

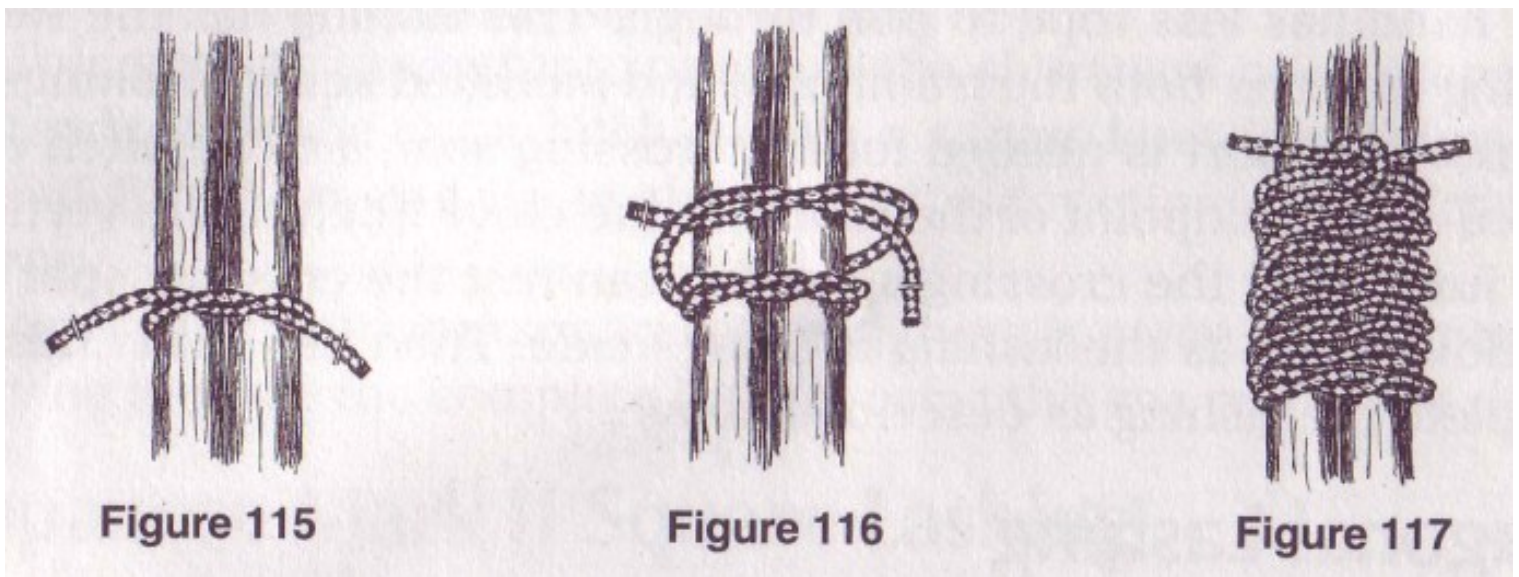


## WEST COUNTRY SHEAR LASHING

The pattern you make with the rope for this lashing is the same as the one to make [the whipping](#). The only difference is that this lashing is tied around two spars to hold them together.

To make this lashing, tie a series of half-knots (overhand knots) around the two spars (see figure 115). Tie one half-knot in front and the next half-knot in back (see figure 116). Make sure each half knot is pulled up as tight as possible. After tying six to ten half-knots, finish off the lashing with a square knot (see figure 117). By using six to ten half-knots in this lashing, it makes it very strong and effective, but can be a little difficult to untie.

The West Country shear lashing is usually used to tie two spars together to extend the overall length of the spars. When this is done, you should make two sets of lashings, not just one lashing. Make one lashing at each end of the overlapping spars.



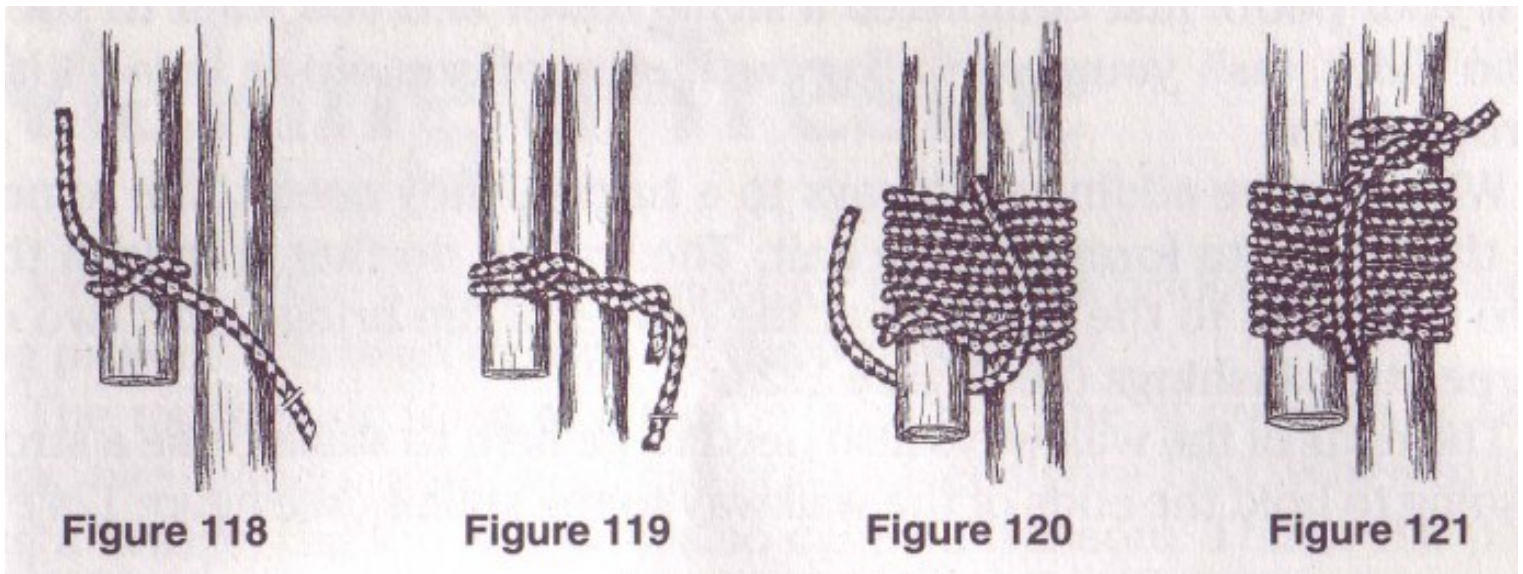
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## TWO-SPAR SHEAR LASHING

There are two applications for the two-spar shear lashing. One is where it is necessary to extend the length of one spar by lashing another spar to it. The second application is when spar legs are to be spread apart to form an A-frame.

In the first application (extending a spar), two lashings are made where the spars overlap. The amount of the overlap of the two spars should be determined by the diameter and length of the spars being used. The lashings should be placed as far apart as possible to maintain the strength needed. ([Round lashings](#) are more frequently used to very effectively extend Scout staves or smaller diameter spars.)

The two-spar lashing starts with a clove hitch on one spar (see figure 118). After making the clove hitch, wrap the excess part of the short running end around the standing part of the rope (see figure 119).



Unlike square lashings, the shear lashing requires eight or ten wraps around the spars before making the frapping turns between the spars to pull the wraps tight (see figure 120). This lashing then ends with a clove hitch on the other spar (see figure 121).

If you're making an A-frame, start the spars side by side and tie a clove hitch on one spar about 1' from the top end of the spars. Then make ten wraps around the spars, making the wraps somewhat loose. The legs are then spread to the required distance. This should put strain on the wraps.

## STROP LASHING

In some pioneering situations all that's needed is a few wraps with a rope, a light cord, or binder twine to hold two small spars or sticks together. Wrap the rope or cord around the spars a few times and finish with a square knot. This is called a strop lashing.

A strop lashing can be drawn down tight, or it can be made as a loose wrap so that it allows movement or acts as a hinge.

The strop lashing can have several simple applications at camp. For example, if you don't want to dig a hole for the staff of your patrol flag, drive a tall stake in the ground. Then use a light cord or binder twine to make two strop lashings about 1' apart to hold the staff to the stake (see figure 122).

If your patrol just completed a signal tower and you want to show who did it, lash your patrol flag to the top of one of the legs with a strop lashing.

When you're adding [walkways](#) to a bridge, they need to be joined to the trestle to form a single unit. The way to do that is to lash the two walkways to the transom at the center of the bridge with two or three strop lashings (see figure 123).

The ends of the walkways also need to be held to stakes. Use a strop lashing to hold the ends of the walkway to the stakes (see figure 124).

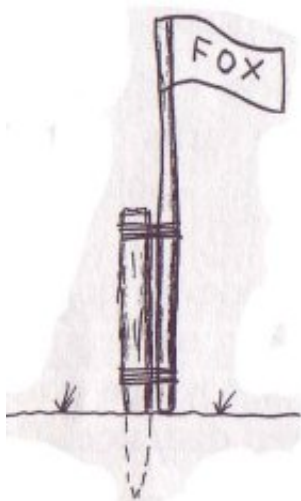


Figure 122

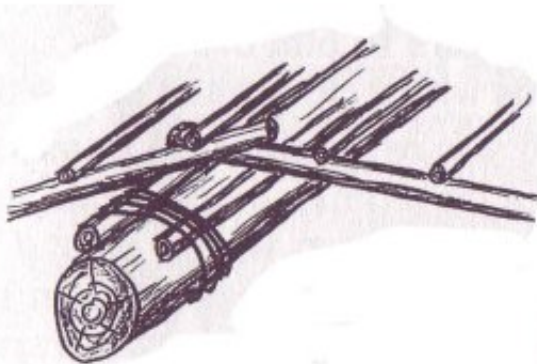


Figure 123

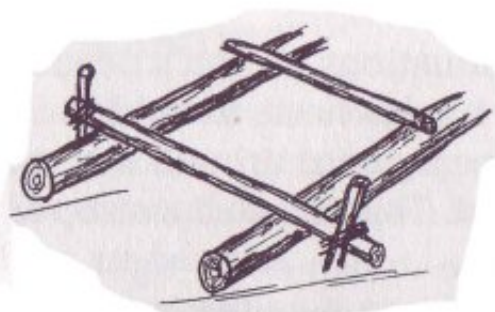


Figure 124