

Making  
A  
Flemish Splice  
Baustring

**A 30-Minute  
HOW TO  
Project**

*By Jim Fetrow*

**B**efore beginning, I must tell you that a few years ago I decided that I wanted to make my own Flemish 3 three-splice bowstring for my longbow<sup>1</sup>. I read and re-read every account of this "magic trick" and never could quite put it together. I even watched it done as a casual observer.

My thanks to Bob McKay for taking time to show and explain how it is done properly and concisely. Until Bob showed me, the three-splice Flemish string was elusive to read about. Bob McKay will still custom make an excellent bowstring for you; he advertises in the classified section of Traditional Archery magazine.

My hope in writing this description is that the text, diagrams and drawings will enable most anyone to make a quality three-splice string if he or she desires. What I am about to describe will take you only twenty-five or thirty minutes to do accurately and successfully, once you get the hang of it.

So that I won't be accused of neglecting the cultural and philosophical aspect of this enjoyable craft, I will offer this quote from Henry Wadsworth Longfellow's Hiawatha:

*"As unto the bow the cord is,  
So unto the man is woman;  
Though she bends him, she obeys him,  
Though she draws him, yet she follows,  
Useless each without the other."*

The three-splice Flemish-type bowstring is simply a number of threads laid side by side and well waxed that have had a little rope twisted near each end to form the nock loop and which is finally spliced back into itself, twisted up and served. There, now you know. Go to it! First though, let me go through some of the finer details.

Before attempting to start building your first string, read all the instructions given in this project article first.

## **ATTRIBUTES DESIRED IN A GOOD BOWSTRING:**

- It must be the proper length so that the correct e height may be had.
- The nock loops must be sized appropriately to fit the individual bow, neither too tight, nor too loose.

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<sup>1</sup> A more common and easier technique is to make a 2-splice string which is much easier for the beginner albeit not as neat a finish. For a 16-strand string, simply make two bundles (skeins) of 8 strands each. If you want to make a 2-colour string, the 2-splice is better because it allows the two colours to look evenly matched and better contrasted. – Dennis La Varenne

- It must be of sufficient strength to stand the tremendous shock of loosing the shaft.
- It must, above all, be durable and trustworthy; a broken string while executing a shot can be disastrous both to the archer and his bow and arrow.
- It should be pleasing to the eye in design craftsmanship as befits all well-made archery tackle.

We will start with a list of materials you will need to build a first-class bowstring. The manufacturers or brands named are my own preference, and have worked well for me. Others of comparable qualities may be used.

## **MATERIALS REQUIRED**

1. Stick-tube of Saunders bowstring wax or beeswax and 3-inch square piece of soft leather.
2. One-quarter-pound spool (1182 feet) of Brownells B-50 waxed Dacron bowstring material.
3. Spool of number 4 nylon serving thread (100 yards), Brownell and Company, again. They also make nylon monofilament if preferred.
4. Sharp scissors.
5. Tape measure.
6. Two paper bread-bag type ties reinforced with a thin wire such as come with bread bags and trash bags, etc.
7. Serving rig, such as the "Little Spinner" advertised in this issue, to greatly aid in serving the finished bowstring neatly, and speedily<sup>2</sup>.
8. A place to work; I sit in my living room and make bowstrings.
9. A one-by-three piece of pine forty-eight inches long with no ragged edges or splinters.
10. Two two-inch finishing nails.
11. Hammer to drive the nails with.
12. Pencil and sheet of paper to make a record of your measurements. Note the make and model bow you are making the string for, to be used for this time and future use. These measurements can be used if you need to make corrections on your next string also.

Items 9 and 10 are for your string-jig board. There are much more elaborate designs, but this will suffice. You may use fancy wood or pegs that are marked, but gain little but a few minutes of time in the making of a good bowstring.

## **THE FIRST QUALIFICATION**

Now we must go back to our qualifications of a good bowstring -to the first one: It must be of the proper length so the bow can be braced at the correct height. Measure the bow from nock to nock while unbraced, along the back (the side away

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<sup>2</sup> Optional: you may hand serve the string.

from the shooter). For descriptive purposes, we will say it is sixty-eight inches nock to nock.

The B-50 Dacron bowstring thread must be cut to length properly. To make a good, strong splice, we will need to add eight extra inches of string on each end in addition to the sixty-eight-inch length nock to nock. This makes the overall length of the B-50 threads needed for this bowstring to be: Sixty-eight plus sixteen, equals eighty-four inches<sup>3</sup>.

Next, take your forty-eight-inch-long pine board and drive one nail in one end and the other, forty-two-inches away from it at the other end. Using the hammer, drive the nails in so they are firmly in the wood being careful that they don't stick out the other side, leaving about one and one-quarter inches to wrap the thread around.

At this point we have to determine how many B-50 threads to cut eighty-four inches long for this bow. We use the draw weight at the archer's draw length to calculate this. For description purposes, we will say this bowstring will be for a bow sixty-eight inches nock to nock and sixty-five pounds at twenty-eight-inch draw.

Following is a suggested table to use to determine how many strands of B-50 Dacron to use so the string is durable and safe, but not overdone. You may choose to make a heavier string by increasing the number of strands if you wish. I would not go much lighter. Bear in mind that a heavier bowstring, while being perhaps more durable, will slow the recovery of the bow limbs somewhat. A heavier string can also make it difficult to find nocks that fit the string properly.

| <b>Draw weight<br/>in pounds</b> | <b>No. of strands<br/>B50 Dacron</b> |
|----------------------------------|--------------------------------------|
| 20-35.....                       | 9                                    |
| 35-45 .....                      | 12                                   |
| 45-60 .....                      | 15                                   |
| 60-75 .....                      | 16                                   |
| 75-90 .....                      | 18                                   |
| 90-plus.....                     | 21                                   |

Using this chart, we find we will have a bowstring of sixteen strands for the bow sixty-five pounds at twenty-eight inches. Each strand will be eighty-four inches long overall, initially.

## **CUTTING THREE GROUPS**

Now, as we are making a three-splice bowstring, we will cut three groups of B-50 Dacron eighty-four inches long. The first two groups will have five strands each, the last group six strands, totalling sixteen strands. For the first group, take the B-50 Dacron and tie the end of the thread on the nail that you drove into the pine board on the right-hand end of your jig-board.

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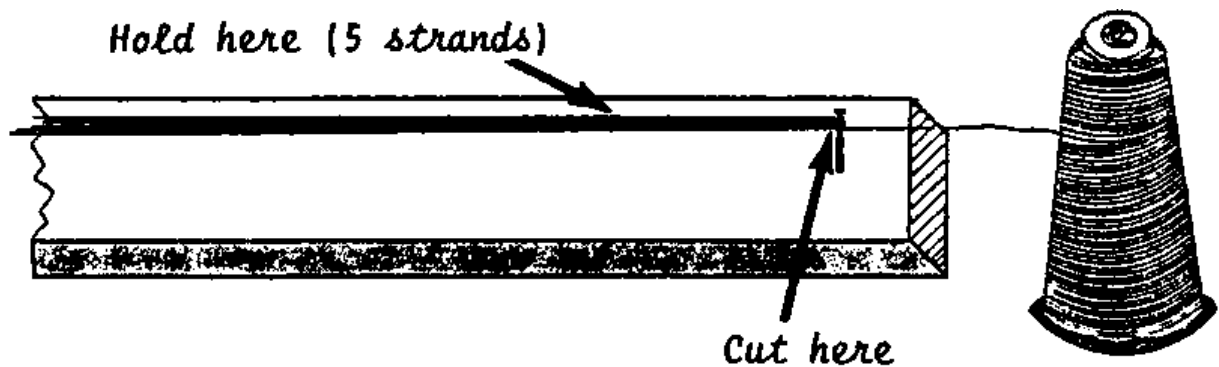
<sup>3</sup> Well made Flemish bowstrings can also be measured out as bowlength along the back plus 8 inches (not 16 inches), with the rope twisting commencing 7-8 inches in from each end.

You may work sitting with the board across your lap. Loop the thread down the length of the board and around the nail on the left-hand end, then back up to where you started. That is one strand for the bowstring.

The nails are forty-two inches apart; forty-two times two equals' eighty-four inches total. We need five strands in the first and second group, so just keep looping the B-50 from nail to nail until there are ten strands around the forty-two inch nail spread.

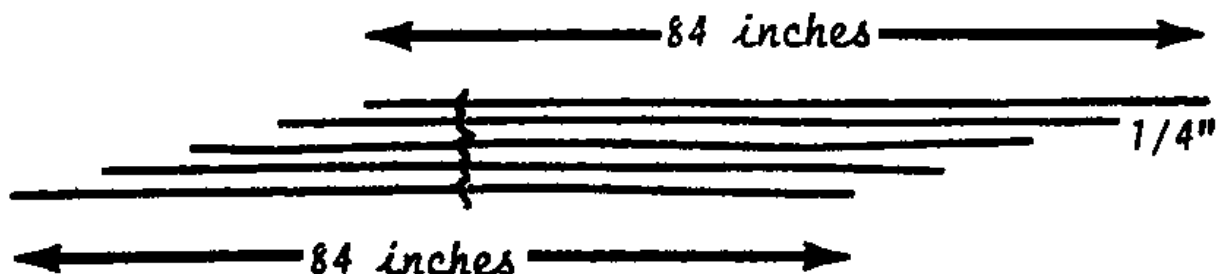
Now, take the sharp scissors and get ready to cut the threads on the right-hand end, right next to the nail. Before you cut, grab five of the strands and hold them tightly. Hold either side, but be certain you hold five that belong on one side of the loop or the other. Now cut the B-50 right at the nail, cleanly, all ten strands. Keep hanging onto the five ends and stretch the five strands out to their full eighty-four inches.

Below is a simple diagram of what I hope you just did:



### LAYING OUT THE STRANDS

These five strands of B-50 will be the first of three splices for the bowstring. Now we must arrange them a bit so that the splice is tapered and gradual when we get to finishing the nock loops. This amounts to laying the ends next to one another in a staggered fashion. One-quarter of an inch stagger each is about right. Start with one end like so:



As you stagger one end, the other automatically is staggered the same. When you get the first end staggered, hold them together tightly and wrap around your center finger to prevent them from slipping and begin to wax toward the other end, all the

while stretching all five strands out so there are no slack spots and kinks. Wax it well by drawing the strands vigorously between your thumb and the wax.

As you stagger one end, the other automatically is staggered the same. When you get the first end staggered, hold them together tightly and wrap around your center finger to prevent them from slipping and begin to wax toward the other end, all the while stretching all five strands out so there are no slack spots and kinks. Wax it well by drawing the strands vigorously between your thumb and the wax.

You will note that this first splice<sup>4</sup> is somewhat over eighty-four inches now that you have staggered the threads (about one inch). Don't panic, it will work out. You now have a splice with both ends having a tapered appearance, well waxed, but as yet, untwisted.

## **ADDING EXTRA STRENGTH**

We will now add some extra strength to each tapered end for what is to become the nock loops and splice. To do this we simply cut four pieces of B-50 Dacron ten inches long, two for each end. Lay them in your hand, one at a time, alongside the tapered ends and wax them into the existing five strings of the taper. Wax really helps hold this whole project together in the making, so don't be skimpy with it.

We now have the first splice prepared. It is about eighty-five inches long overall. It has five strands of B-50 in its center, which will be the body the bowstring, and a total of seven strands on of the tapered ends, which will become the loops and splice. Lay it aside now. (I lay mine out on the back of the sofa where I am sitting).

Now, do the same operation once again, make the second five-strand splice and take a break. Make the third and last of the three splices, only with these changes: Lay out six strands of B-50 Dacron thread eighty-four inches long instead of five as you did for the first two splices. ( $5 + 5 + 6 = 16$  strands).

Lastly, when you add the ten-inch pieces for thickening the tapered ends, add only one on each end. So the last splice has six strands of B-50 in the center part, and seven strands on each of the tapered ends. The finished bowstring will have sixteen strands of B-50 With a total of twenty-one strands in the nock loops and splices.

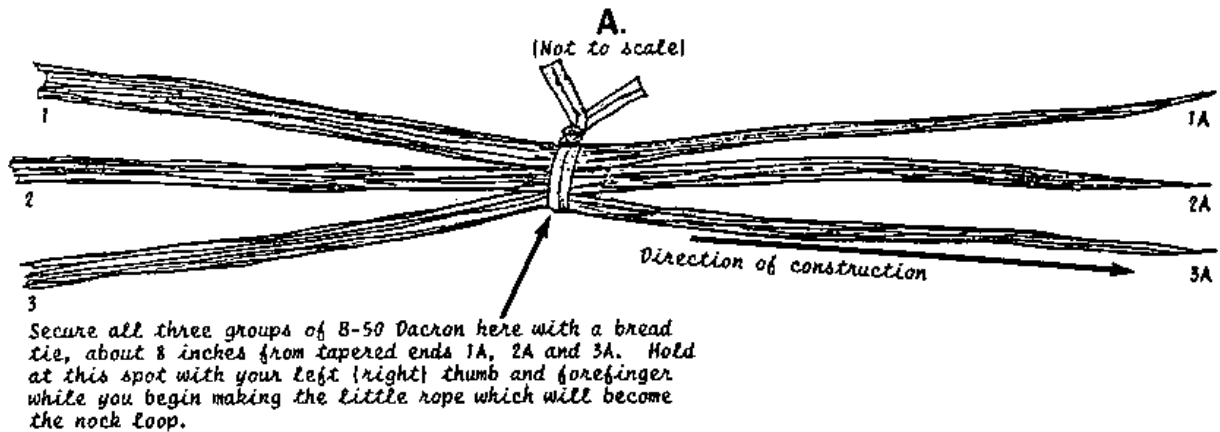
## **NOW COMES THE FUN**

If you have followed the directions and managed to get through this initial, boring, mechanical preparation, you will now be rewarded with the really enjoyable part of bowstring making. The first part was therapy, this last is great! I got so fired up I drew some pictures for you to follow as you go.

The string being made here is for a right-hand bow. For a left-hand string reverse all (left/right) directions as noted in parentheses. Take a look at figure A below.

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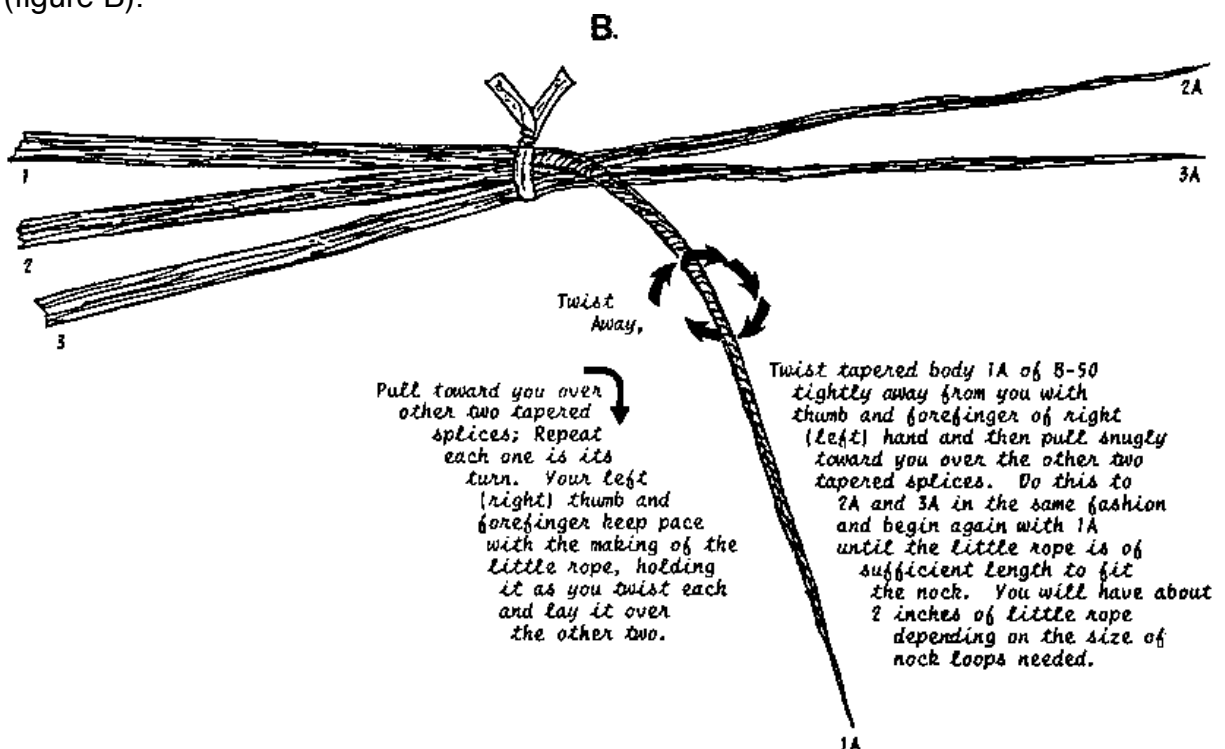
<sup>4</sup> In Australia, a bundle of individual strands is a skein. A splice is the manner in which the skeins are twisted together. – Dennis La Varenne



Get those bread ties out that I spoke of earlier; they help keep the little rope you are getting ready to make from untwisting. Take all three splices and even the tapered ends and twist a bread tie snugly around them eight inches from the tapered ends (figure A). The tapered ends are to your right (left, the rest of the bowstring-to-be is to your left (right)). The work will proceed to the right (left).

## TWISTING A LITTLE ROPE

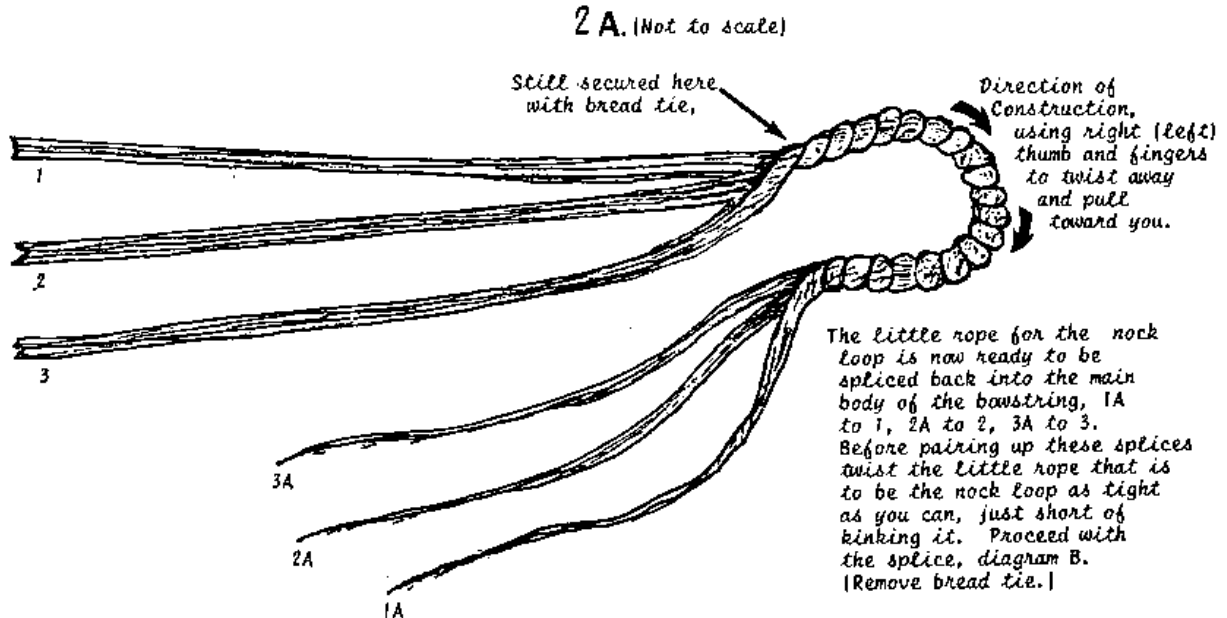
Hold with your left (right) thumb and forefinger at the bread tie and take one of the tapered groups of B50 and twist it tightly away from you with a rolling motion. Now, pull this twisted group toward you and down over the other two tapered ends (figure B).



Hold it and the others at that point with your left (right) thumb and forefinger. Take the tapered end next in succession and do the same.

Continue in this fashion and you will see a little rope of all three splices emerge from beneath your left (right) thumb and forefinger. Continue to twist each one

away from you and pull down and toward you, each in turn which will be the one underneath and away from you, until you have a little rope that is about two inches long. Take a look at picture 2A.



The nock loop is now ready to be spliced back into the body of the bowstring.

## MAKING THE NOCK LOOPS

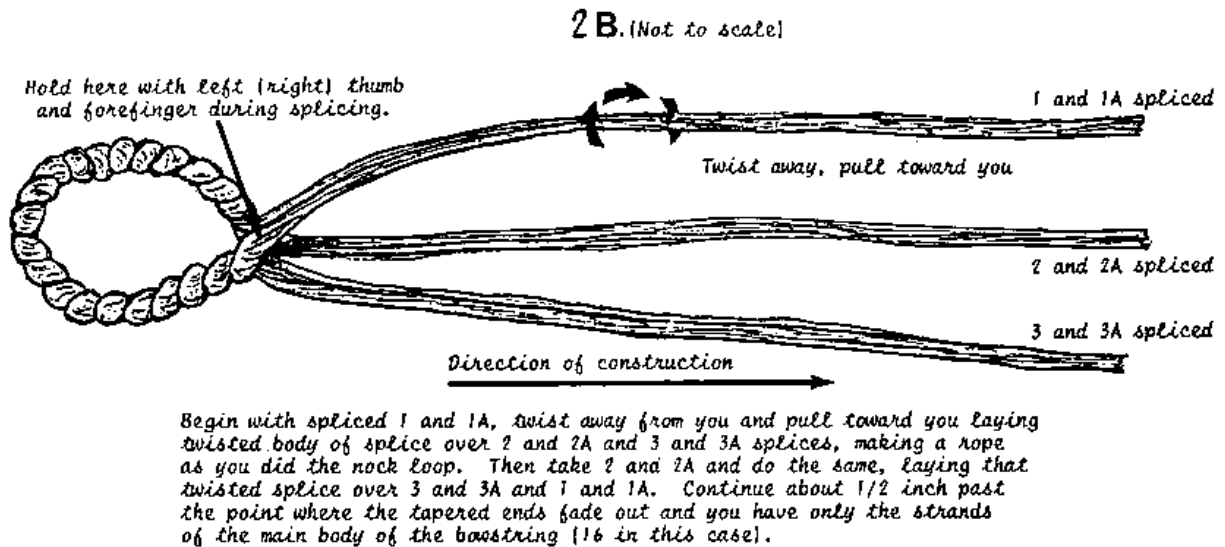
At this point, determine if the little rope is long enough to fit the nock of the bow. If you are making the nock loop for the lower limb, the bowstring's nock loop should fit snugly, but not tight as it passes over the end of the bow tip. The upper nock loop should be just large enough to be able to slip down the upper limb about six inches or so when you unbrace the bow, but not so large as to be sloppy. Lengthen your little rope or shorten it as needed.

Bows with narrow limb tips or shallow string groves will require a smaller than average sized loop. At this point write down how much you are going to use for each loop. In case it is not right, you can correct on the next string, which would be good to make as soon as you can while this is fresh in your mind and to better remember it later on when making another string or showing someone else how.

Now, remove the bread tie at the beginning of the little rope and hold the loop at that point with your left (right) thumb and forefinger. Separate the three splices that are to be the main body of the bowstring so that you have three distinct splices ready to splice the tapered ends back into. Look again at Picture 2A above.

Twist the little rope up tightly so it is round and hard, however not so tightly that it kinks. Now you are ready to pair up the tapered ends with the three splices of the main body of the bowstring and begin the splice. With the two ends of the little rope snugly together, "wed" or "pair up" tapered splice 1A and 1, 2A and 2, 3A and 3 as in figures 2A and 2B.

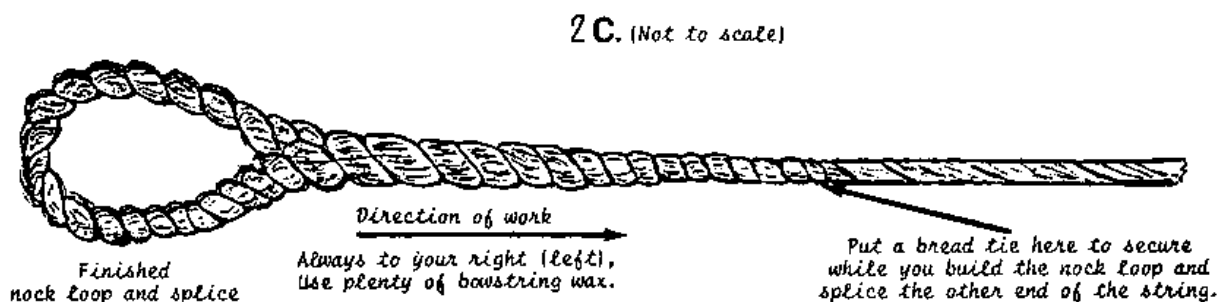




At this point, you begin the splice which is done the same way you made the little rope for the nock loop. Twist away one pair tightly and pull toward you, laying the twisted splice over the other two. Take each one in succession as you did for the little rope of the nock loop. Again, hold your work with the left (right) thumb and forefinger while your right (left) does the work.

## USE PLENTY OF WAX AND TWIST TIGHT

By now, if you have been twisting tightly, your right (left) thumb and forefinger may be getting a little tender, but grin and bear it. The best, most durable bowstrings are made **using plenty of bowstring wax and are twisted hard and tight**. Your left (right) thumb and forefinger should keep pace with the progression of your work; you will again see the finished splices rope emerge out to the left (right) of your left (right) hand.



Continue to splice until all the tapers are exhausted and you are down to the main body of the bowstring (sixteen strands). You will have about four to six inches of splice that looks like picture 2C above.

Go one-half inch farther and stop your rope making splice and secure there with a bread tie to keep everything together while you go to the other end of the bowstring and construct the nock loop and splice there.

## **GOING TO THE OTHER END**

On your way to the other end, separate the three splices, (five strands, five strands and six strands) and gently pull them evenly between your fingers as you go toward the other end of the bowstring. The tapered ends should be even with one another or nearly so. Secure these three splices together with a bread tie eight inches from the tapered ends, just as you did for the nock loop at the other end.

We are again back to diagrams A and B above. Twist each tapered splice away from you, then pull toward you and down, over the other two tapered splices. This second end is going easier, isn't it? Construct your little rope for this nock loop just as before. The splice is done the same as well, making sure it fits the other end of the bow properly.

## **TWISTING UP THE STRING**

When this second nock loop and splice is complete, have someone hold the nock loop at one end of the string while you hold the other and twist the whole bowstring up to the right (left). This will shorten it somewhat and is essential, for if not twisted up, the splices you made may pull out.

This twisting is done against the twists of the "little rope" you made when you made the splices to complete the nock loops. There should be no less than two twists per inch in the main body of the bowstring; I like about five twists per inch in my strings as it makes for a good rounded bowstring.

You are now ready to fit your bowstring to the bow and brace it. Do so and see how the brace height looks. If it is low, remove the string from the upper limb and twist it up some more. Keep doing this fitting and twisting as needed until the brace height is about one-half to three-fourths inch higher than you want it to be when finished.

The bowstring will stretch some on the braced bow when it is first put on. On really heavy bows, ninety pounds and up, I have seen it stretch two inches. You will notice a good bit of wax being squeezed out as this stretching takes place. That indicates that you used plenty of wax, which is good.

Leave the bow braced with its new string for twenty minutes or so. It should be stretched out about as much as it will be. Now, wax the body of the string well, then use the soft leather piece to work the wax into the string and nocks. The combination of pressure and motion create heat by friction that melts and smoothes the wax into the string.

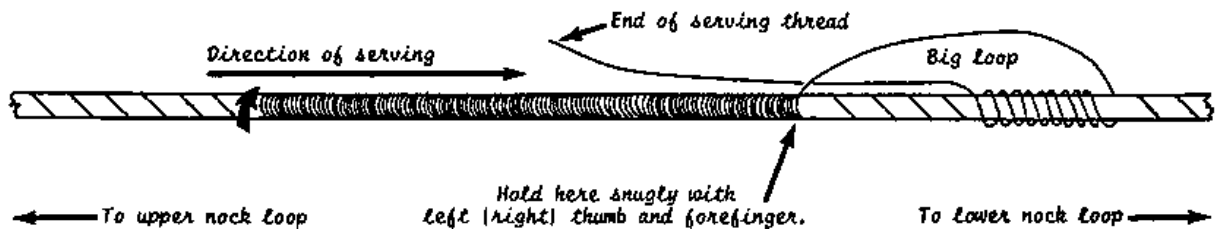
## **SERVING THE BOWSTRING**

Now we are ready to serve the bowstring to protect the area where the fingers lay on the string. The central part of the bowstring also strikes the armguard of the bow arm occasionally, and of course, the nock of the arrow fits the string there. Take a look at picture 3A below.

### 3A. (Not to scale)

*Done while bow is braced,  
after string has stretched out*

*When ready to end serving, prepare to tie  
it off as so, loose loops underneath loop.  
Direction is reversed.*



Serving must be done with the bow braced as the string must be stretched taut and you must know where to put the serving. Determine about where the arrow will be nocked on the string and go to a point one and a-half to two inches above that to begin serving.

I usually work sitting down with the braced bow laying across my legs. The belly of the bow and string are up, upper limb string nock to your left for a right-handed bow; to right for a left-handed bow. If a left-hand string is served in the right-hand fashion it will tend to unwind the serving when the string slips off the fingers while shooting.

Take the spool of nylon serving thread and pull three inches of thread out and lay it on and along the string, from left to right (right to left for left-handed bow), beginning where you want the serving to start. Hold the thread with your left (right) thumb and forefinger snugly on the bowstring and begin to loop the serving thread on the spool around and around the bowstring, over the three-inch end of the serving thread for about ten snug loops. The looping is done away from you and progresses to your right (left) toward the end of the thread.

Once you have served ten loops or so snugly, take the loose end that runs beneath your serving that you first laid down and pull it snug and clip off. The serving is secured on one end now and you may continue to serve the string to the right (left) toward the lower nock. I usually serve eight to ten inches overall and then tie it off as indicated in picture 3A and B.

## TYING OFF THE SERVING

To tie your serving off, pull out about twelve to fifteen inches of serving thread while holding securely the spot where you halted serving with your left (right) thumb and forefinger. Make a big loop that arcs above the bowstring several inches. You will notice in diagram 3A above, that the thread is loosely looped in a reverse fashion back toward where you are holding.

After serving the eight or ten loose reverse loops beneath the big loop, take the end and lay it along the served bowstring past where you have been holding with your left (right) hand. Take the big loop and use it to continue serving snugly in normal fashion.

### 3B. (Not to scale)

*After preparing to tie off the serving as in diagram A, take loop and continue normal serving over top of the end of the serving thread. Continue to hold snugly with your left (right) hand while your right (left) does this.*



*As you serve these last 8 or 10 loops, the reverse serving that you prepared beneath the large loop will unwind and you will end up as in diagram B. All that remains is to pull the end of the serving thread until what's left of the big loop is pulled under the serving and snugged up.*

*The main part of the serving may be done by hand or with a serving jig. The tying off must be done by hand. Serve your string beginning about 3 inches above your nocking point down toward the lower limb for 8-10 inches overall. Serve snugly, but not super tight, especially if using nylon monofilament rather than nylon thread.*

You will notice that for each normal loop you serve, one of the "loose loops" disappears. Continue serving until all that remains is a remainder of the "big loop" sticking out as in picture 3B above. Take the end of the serving thread that you have been serving over and pull it snug; the remainder of the "big loop" will disappear. Cut the leftover serving thread off and your bowstring is complete.

So you have made a success of your first Flemish three-splice bowstring. As you make others, your technique and ability will improve and you will probably refine your bowstring jig into a more versatile and permanent tool. The string jig I use is set up to make bowstrings for bows of seventy-two down to sixty inches nock to nock, twenty to one hundred plus pounds. It just has more nails in it, basically.

I hope this detailed description will enable you to build a good bowstring. The time taken to document this procedure for you has been equal to the time it takes to make a fine self bow, a matched set of arrows and several strings, yet as said, the actual bowstring making will take you less than thirty minutes or so once you are familiar with the procedure.

Best of archery to you!

*Jim Fetrow*