

# WRAPPING A WOODWIND TENON

by Lars Kirmser

It is not uncommon for woodwinds, especially those of the double reed family, to be equipped with *wrapped* tenons (vs. *corked* tenons). Wrapped tenons are the result of tightly winding a strong nylon thread in an orderly fashion about a tenon channel until the thickness of the wrapped thread will permit the tenon to fit snugly into its corresponding socket.

Cork is most commonly used as a tenon covering by manufacturers of musical instruments because it is, for the most part, a more expedient and less expensive method of finishing a tenon joint. Wrapping a tenon with thread, on the other hand, renders a far stronger and longer lasting tenon. Furthermore, it has the advantage of being easily adjusted as it becomes compressed with extended use.

## WRAPPING THE TENON

Prior to wrapping the tenon, make sure that all previous tenon materials (i.e. old cork, adhesive, grease, etc.) have been adequately removed from the tenon. If there is any damage to the tenon itself such as cracking or chipping, be sure to remedy this before proceeding. Prior to starting the process the tenon should be treated with a thin coat of liquid shellac; this provides for a secure base for the wrap. You will also want to cut an 8" length of thread to be used in securing the final wraps of the tenon. The actual wrapping of the tenon may be done totally by hand. However, I find that by securing the instrument section on a machine lathe in a live center, the technician is able to achieve superior results.

Once the instrument section is placed between the live center and the 3-jaw chuck on the lathe, begin the wrapping process by turning the lathe chuck with your left hand and feeding the thread on with the right hand. It is **not** advisable to use a power setting on the lathe, even if it is a very slow speed. It is more effective to feed the thread onto the tenon slowly and with an even, moderate tension. Avoid wrapping the thread too tightly or too loosely for that matter. There is a happy medium where the thread will be secure and will not shift within the groove. Be advised that to wrap the tenon too tightly will produce undue strain, and may cause the tenon to distort or even collapse, especially on bassoon bass sections.

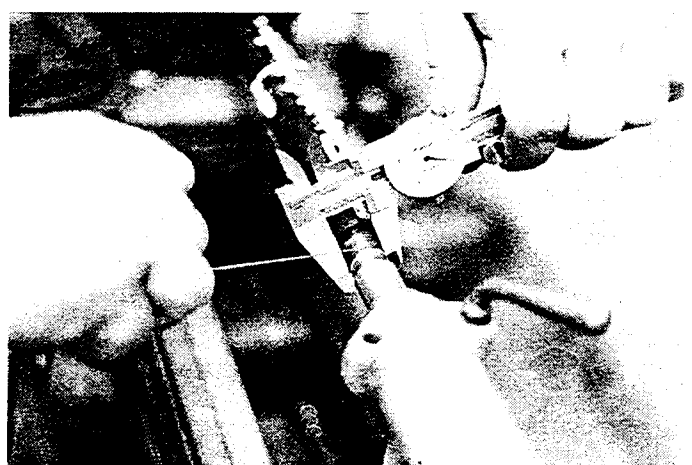
Continue winding the thread until the overall diameter of the new tenon is approximately the same as the I.D. of its corresponding socket. At this point, fold the 8" length of



*Making the initial wraps between live centers on the lathe*

thread that we cut initially in half. Then lay this looped string across the tenon wrap. Continue winding the thread evenly across this looped string until the diameter is just slightly larger than its corresponding socket. The first time that a technician performs this task, he may have to incorporate a little trial and error to determine exactly how much larger to make the tenon in order to achieve a proper fit. This amount will depend upon the relative tightness of the wind and the overall compressibility of the specific type of thread that is used. As an arbitrary figure I recommend that you wrap until the overall O.D. is approximately .005" oversized (the wrap tends to compress slightly when first fit into the corresponding socket).

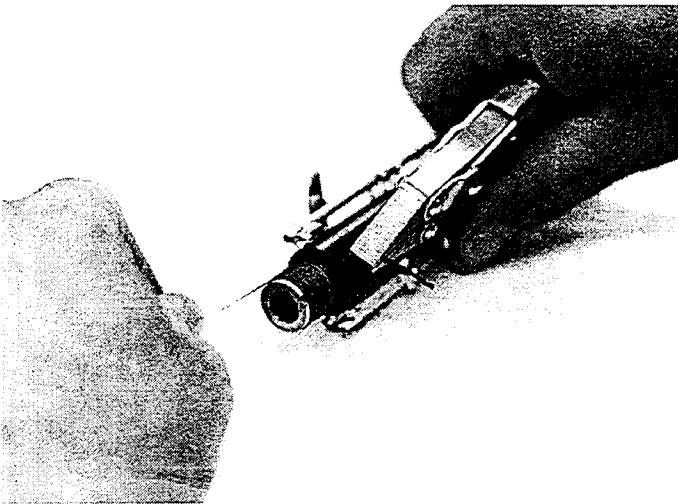
These measurements can be monitored with a dial caliper as the work progresses. The loop, which now extends out



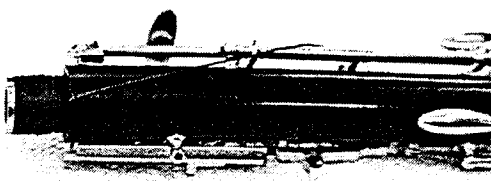
*Measuring the O.D. of the Wrappings*

from under the last series of winds, is used to secure the final length of thread by placing it through the loop and pulling it tightly under this last complete row. I use my Square Jaw plier for this step. This technique will keep the tenon thread from unwinding easily while in use (see Illus.).

As a final step, the newly wrapped threads are coated with bees wax, and carefully heated over an alcohol lamp



*Securing the end of the string by pulling it under the last series of wrappings*



*The secured string*

to cause the bees wax melt into the new tenon threads. Be careful not to melt any of the threads. This last step, which may be repeated as necessary, will help stabilize the material as well as offer a certain amount of lubrication to the tenon, making the eventual assembly and disassembly process easier. As mentioned earlier, this type of tenon preparation has the advantage of rendering a stronger tenon with a longer lasting fit. When it does require adjustment, one merely has to add additional wraps of dental floss to compensate for any compression as the result of extended use.

### **WRAPPING SEQUENCE:**

1. **Remove old tenon material and adhesive.**
  - Any damage to the tenon should be repaired at this time.
  - Clean the tenon with alcohol on a soft, lint free cloth.
2. **Place the instrument joint on the machine lathe between a 3-jaw chuck and a live center.**
  - The tenon to be wrapped should be on the live center side (see Illus.)
  - Be careful not to force the live center taper into the tenon so hard that it will cause it to split. Support the end of the tenon with a metal end cap of the correct size.
3. **Begin wrapping nylon thread about the tenon channel firmly and in an orderly fashion.**
  - Rotate the instrument section with the left hand and feed the thread evenly and orderly with your right hand.
  - Do not use power on the lathe while wrapping.
  - Wrapping too tightly will place undue force on the tenon.
  - Wrapping too loosely will result in the eventual shifting of the threads.
  - Place a loop of thread across the wrapped tenon when the diameter of the tenon approaches that of the corresponding socket (see Illus.).
  - Continue wrapping over the looped thread until the overall diameter is only slightly larger than the corresponding socket. Secure the end of the thread through the loop and then pull it beneath the final wrappings with your flat nose pliers (see Illus.).
4. **Apply bees wax and heat to the new tenon material until it is saturated.**
  - Be careful not to burn the threads.
5. **Precision adjust the tenon fit.**
  - If the tenon does not fit snugly enough, a few extra windings of waxed flat dental floss may be added.
  - If the tenon fit is too snug, the windings can be compressed somewhat by carefully working the tenon in and out of the socket. If the outside diameter of the tenon is too large to simply compress in this fashion, the last complete row of windings may have to be removed and then built up to the appropriate size with flat waxed dental floss. On occasion, a receiver socket may be enlarged slightly to alleviate the tightness. Conversely, I do not recommend that you compensate for this tightness by removing the wrapping and deepening the channel of the tenon slightly (and then rewrapping the tenon). This would be inadvisable, as it would unnecessarily weaken the tenon dramatically (especially on the bass sections of bassoons).