THE CONN SAXOPHONE MICROTUNER

After a mouthpiece is placed on the neck of a saxophone it is then moved in (farther on) to raise the pitch or out to lower the pitch. The adjustment of the pitch by varying the tubing length by one method or another is common to most wind instruments. In most, if not all, cases the properties of the mouthpieces are not affected. However, as the mouthpiece of a saxophone is moved farther on the neck, the neck then protrudes farther into the mouthpiece, causing a reduction in the chamber volume of the mouthpiece. The chamber volume is believed to affect the intonation, quality, and stability of the notes produced by the saxophone.

In July 1919, Conn engineer Edward J. Gulick was granted a patent for a saxophone microtuner, the primary purpose being to provide a convenient means to adjust the overall pitch of the instrument without having to move the mouthpiece on the cork. An apparently unintended benefit was that the mouthpiece chamber volume remains unaffected. This is true provided the mouthpiece is not moved relative to the cork during the tuning process.

The microtuner assembly consists of a receiver, a composite piece which I will call the armature, and a collar with a retaining nut. The receiver is an integral part of the saxophone neck and has external threads to accept the collar. An early version of the receiver is shown in Figure 1. The armature is made of three parts. First is a thin-walled cylindrical brass tube which telescopes snugly into the bore of the receiver, Second is an annular flange with a larger external diameter than the receiver. Third is a conical (tapered) tube (referred to as the mouthpipe) which is covered with a thin layer of cork to accept the mouthpiece. Figure 2. is an axial view of the armature showing the tube which slides into the receiver and it also shows the annular flange.


Figure 1.


Figure 2.


Figure 3.

Figure 3. shows the collar, a side view of the armature, and the retaining nut. The collar is a hollow cylinder with two different inner diameters. The smaller diameter portion mounts nearest the neck and has internal threads which mate with threads on the receiver. The larger diameter portion is partially threaded to accept the retaining nut, and the shoulder between the two sections of the collar together with the retaining nut serve to form a chamber to confine the flange of the armature. When the collar is turned on the receiver, the armature is forced to move toward or away from the

receiver, thereby moving the mouthpiece relative to the neck.

To prevent the armature (and the mouthpiece) from rotating during adjustment, various arrangements were tried. The earliest I have seen consists of six steel pins mounted in the receiver in a slightly irregular array and protruding about a quarter inch. Figure 1. shows the partially rusted remains of the pins. A matching array of holes in the armature flange is shown in Figure 2. As long as the pins are engaged with the holes, the armature cannot rotate while the collar is turned on the receiver.

This early design was seriously flawed. As a mouthpiece is mounted on the cork, it is invariably twisted or rotated about its long axis while being pushed on the cork. Even with a very carefully shaped and lubricated cork, the armature will simply rotate with the mouthpiece unless the receiver pins are engaged with the holes in the flange. The pins bend fairly readily, so the safest method is to turn the collar all the way on, thus ensuring that the pins are completely inserted in the flange. After the mouthpiece is mounted, the collar can be turned so as to lengthen the neck and adjust the tuning. The short pins only allow about a quarter inch of adjustment. More movement can be made, but the pins will be disengaged and the mouthpiece must be held while turning the collar. Re-engaging the pins can be frustrating and potentially damaging. Finally, the pins tend to rust away in the presence of moisture. See Figure 1. and the C melody version in the microtuner article by Stephen Howard at www.shwoodwind.co.uk.

Figure 4.

Figure 5.

Figure 6.

Longer pins on the early model would have allowed a greater range of tuning adjustment, but they would have protruded through the flange and interfered with the placement of the mouthpiece. A later version, Figures 4., 5., and 6., features an irregular pattern of six holes in the receiver and a matching array of pins mounted in the armature flange. The pins (and the telescoping section of the armature) are approximately three quarters of an inch in length. This provides an adequate range of tuning adjustment, but the pins are more susceptible to distortion and are still subject to rusting.

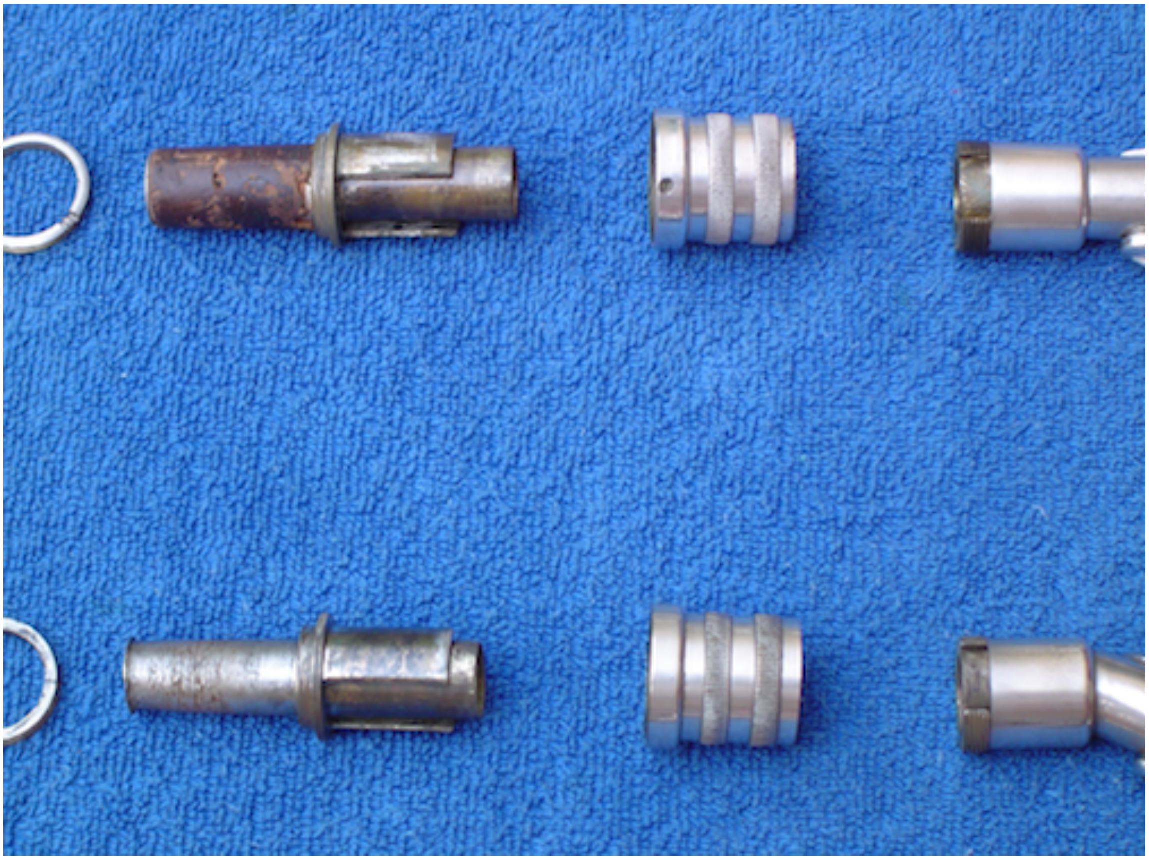

Figure 7.

The most common form of the microtuner , shown in Figure 7., features a pair of diametrically opposed tongues fastened to the flange and concentric with the axis of the armature. Corresponding slots are cut in each side of the receiver. This construction is symmetrical so it is possible to assemble the tuner rotated 180 degrees from its original position.

In Figure 7. the uppermost components are from a straight neck C melody and the lower are from a fairly rare tenor style neck C melody. The former has a longer telescope section and slightly shorter tongues when compared with the latter.

Conn put microtuners on its altos and C melodys. The retaining nut and the collar are identical and the external dimensions of the receiver are the same for both instruments. However, the telescoping tube on the altos is shorter and larger in diameter, and the mouthpipe is shorter and more strongly tapered than for the C melodys. The tip opening inner diameter of the altos is about 0.005 inch larger than that of the C melodys.

The underslung neck was introduced during the transition from the New Wonder models to the Standard models about 1930. Early underslung necks appear to have the previous design of microtuner, but late in the transition a new design was introduced. The receiver has been lengthened and mounted farther onto the neck so that the octave pip is located on and underneath the receiver. The armature is made with only one tongue and the slot for the tongue is at the top of the receiver. The telescoping tube is shorter and the mouthpipe is longer and has almost no taper. The inner diameter of the tip opening is increased by 0.035 inch over that of the previous altos. The overall length of the neck is essentially unchanged. I have a fairly rare version with a top mounted octave key which has the octave pip on top of the receiver and the tongue and slot underneath the neck. It has a semicircular notch in the telescoping tube to prevent interference with the octave pip. Opposite the octave pip the receiver is stamped STDD over an M. An identical marking was found on instrument 292XXXA which has an underslung octave key

The final version of the microtuner appeared with the introduction of the VIII neck around 1936. The only apparent change was that the collar was no longer knurled but had raised ribs to facilitate turning, and the notch in the telescoping tube was eliminated. An excellent photo of this version is available in the microtuner article by Stephen Howard at www.shwoodwind.co.uk.

The earliest version, with pins in the receiver, was on instrument number 69799 (1921); the version with pins in the flange was on instrument number 73027 (1921); and the one with two tongues and slots was on number 80929 (1921). However, the two-tongues-and-slots version on the curved neck C melody was on instrument number 57920 (1919), which makes it difficult to establish a timeline.

RELATED OBSERVATIONS

I have seen a photo of an underslung neck with microtuner which was stamped on the tenon socket with the digit 7. It appeared to be similar to the VIII neck version except the receiver was shortened and the octave pip was not on the receiver. Other than having a ribbed collar, it resembled the first version that was on the underslung necks when they were introduced. Possibly Conn considered that they had eight different neck designs in production at various times.

The mouthpieces (alto and C melody) that were made before about 1930 have a conical (tapered) bore. This includes Conn Eagle, Buescher, and some aftermarket pieces. It seems logical that with a uniform layer of cork on a tapered mouthpipe, there would be a nearly unique position for such a mouthpiece. Moving the mouthpiece to raise the pitch would require increasing force to compress the cork (perhaps irreversibly) and moving it to lower the pitch would risk having a loosely mounted mouthpiece. This would be obviated by the microtuner with the mouthpiece fully on the mouthpipe. Around 1930 mouthpieces began to be manufactured with cylindrical bores. The Conn Standard Steelay mouthpiece resembles the Conn Eagle, but has a cylindrical bore and a longer shank and is appropriate for use with the later (Standard Model) versions of the microtuner.