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3,618,440

## LIGATURE FOR SINGLE REED WOODWIND MUSICAL INSTRUMENT

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1 Claim

### ABSTRACT OF THE DISCLOSURE

An improved ligature is disclosed which is spaced from both mouthpiece and reed to permit freer vibration of both mouthpiece and reed resulting in richer, darker, mellower tones and more even tones throughout the various registers of the instrument.

This invention relates to an improved ligature for a single reed woodwind instrument.

The first ligature for a woodwind instrument known to the prior art was simply a piece of strong cord wound tightly around the mouthpiece of the instrument and the reed in place on the mouthpiece. Indeed, this method is still in use with minor refinements on certain double reed instruments. A substantial advance in the art occurred when a ligature comprising a metal band which could be tightened or loosened by screw means was used to secure the reed to the mouthpiece. In more recent times, plastic materials have been introduced as a replacement or an alternative to the metal band.

It is also known to the prior art to introduce a spacer between the ligature and the reed to permit the reed to vibrate more freely. There were still problems, however. The tonal qualities of the single reed woodwind instrument were still thinner, reedier and less resonant than optimum. Instrumentalists desired a fuller, darker, richer and mellower sound. The extreme upper and lower registers of woodwind instruments tend to be difficult to play in, and sensitive adjustments of embouchure must be made to even out the tonal characteristics of the scales and make them more nearly uniform to the middle register. The technical difficulties of playing in these extreme registers have a tendency to rob some performers of confidence in playing in these ranges. Consequently, such performers display a lack of authority in attacking the extreme registers which impairs their technique.

I have discovered that, contrary to the teaching of the prior art, it is more important to make it possible for the mouthpiece to vibrate freely than it is to free the reed for further vibration. Even in the contemplation of the former art, the ligature provided a great deal of freedom of vibration for the reed inasmuch as the area of contact was at the dense end of the reed and the thin vibrating portion was free to vibrate. However, the restraining influence of band-type ligatures which tightly bound the circumference of the mouthpiece greatly inhibited the vibration of the mouthpiece itself. In the prior art ligatures, the mouthpiece vibrations were damped at three points along its relatively short length: at its base where it fits into another portion of the instrument; at the point where the ligature binds it tightly; and at its tip which is restrained by the upper teeth of the instrumentalist. The reed is fastened at only one point near its large end and the tip is free to vibrate against the lower lip of the instrumentalist. Thus, because of the relationship between embouchure and ligature and instrument, the reed has always been freer to vibrate than the mouthpiece. The mouthpiece is the resonating chamber where sound originates in a single reed instrument, and while vibrating to some extent it has not been free enough to produce the full rich sounds desired by musicians.

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Accordingly, it is an object of this invention to provide an improved ligature for a single reed woodwind instrument.

It is, more specifically, an object of this invention to free the mouthpiece of a single reed woodwind instrument to vibrate more freely.

In another aspect it is an object of this invention to even out the tonal characteristics of high, low and medium registers, to make the higher registers easier to attack by the instrumentalist and thus impart more confidence to the instrumentalist, enabling him to relax more while performing.

These and other objects and advantages will become apparent to persons skilled in the art from a consideration of the disclosure herein and the drawings attached hereto in which:

FIG. 1 is a perspective view of the ligature of this invention;

FIG. 2 is an elevation view of this invention;

FIG. 3 is a perspective view of a mouthpiece with a reed secured in place by this invention;

FIG. 4 is a view of the device of FIG. 3 taken along the line 4—4.

Briefly, I provide a ligature for resonantly securing a reed to the mouthpiece of a single reed woodwind musical instrument. The ligature comprises: a holding means for securing the reed to the mouthpiece of a single reed woodwind instrument; means for spacing the holding means from the reed to permit freer vibration thereof; and means for spacing the holding means from the mouthpiece to permit freer vibration thereof.

I also provide the ligature described above wherein the holding means comprises a strip of flexible substrate adapted to encircle the mouthpiece and the reed in position for use on the mouthpiece, said strip having an inside surface nearer the mouthpiece and an outside surface, and means for drawing together and securing the ends of the flexible substrate. The means for spacing the holding means from the reed comprises a plurality of first spacers for holding the reed in place relative to the mouthpiece, the spacers depending from the inside surface of the substrate approximately midway between the ends thereof, such that the reed is spaced from the inside surface of the substrate and thus vibrates more freely. The means for spacing the holding means from the mouthpiece comprises: one or more second spacers disposed at the ends of the substrate, the spacers adapted to space the inside surface of the substrate from the mouthpiece and thus permit the mouthpiece to vibrate more freely; and a plurality of third spacers depending from the inside surface of the substrate and disposed between the first and second spacers, the third spacers being adapted to space the inside surface of the substrate from the mouthpiece and thus permit the mouthpiece to vibrate more freely.

I also provide the ligature described above wherein the first spacers comprise inwardly directed elongate flanges disposed substantially perpendicular to the longitudinal dimension of the substrate at approximately the midpoint of the substrate. The second spacers comprise inwardly directed elongate flanges disposed substantially perpendicular to the longitudinal dimension of the substrate, the flanges depending from the inside surface of the substrate, and the third spacers comprise inwardly directed elongate flanges depending from the inside surface of the substrate and disposed approximately midway between the first and second flanges.

Attention is now invited to the drawings. In FIG. 1 the substrate 2 is made from polyamide, commercially sold as nylon. Other plastic materials will do quite nicely, but nylon is preferred because of its toughness and durability. Cooperating first flanges 4 are, in this embodiment, integrally molded with the substrate 2 and depend there-

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from. They are spaced apart from each other to provide a gripping surface which will hold the reed in place with a minimum of surface contact. The inwardly directed second flanges 6, in cooperation with opposed third flanges 8, space the substrate 2 from the mouthpiece 12 with a minimum of surface area contact between substrate 2 and mouthpiece 12. This prevents a minimum of vibration damping contact between mouthpiece 12 and ligature 1, inasmuch as little area of the inside surface 10 of the substrate 2 is in contact with the mouthpiece 12. Tabs 14 and 16 are integrally formed at the ends of the substrate 2. The tab 14 is tapped to receive the threads of a screw 18 which serves as a means of loosening and tightening the ligature 1. Tab 16 has a smooth bore 20 which does not engage the threads 22 of the screw 18. I have found it preferable to situate the portion of the ligature 1 where the ends of the substrate 2 are drawn together at the point on the mouthpiece 30 opposite the reed 40. This is purely a matter of practicality inasmuch as the ligature 1 is easier to adjust and the adjustment interferes less with the positioning of the reed on the mouthpiece when the screw 18 is on the side opposite the reed 40.

Having now fully described my invention and the presently preferred embodiment thereof, I claim:

1. A ligature for resonantly securing a reed to the mouthpiece of a single reed musical instrument comprising:

(A) a single strip of flexible material adapted to encircle the mouthpiece and fix the reed in position for use on the mouthpiece, said strip having first and second ends defining a longitudinal dimension, said strip further having an outside surface and an inside surface nearer the mouthpiece than said outside surface;

(B) first and second spaced apart elongate flanges depending radially inwardly from said inside surface approximately midway between said first and second ends for holding the reed in place on the mouthpiece such that the reed is spaced from said inside surface, each of said first and second flanges extending perpendicularly to said longitudinal dimension;

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(C) means for drawing said first and second ends together consisting of first and second integral tabs extending outwardly from said first and second ends, said first tab being tapped to receive the threads of a screw and said second tab having a smooth bore, and a screw with a threaded portion dimensioned to pass through said smooth bore and threadably engage said first tab and a shoulder portion dimensioned to stop against said second tab such that said ends may be selectively pulled together and loosened by turning said screw;

(D) first and second raised portions depending inwardly from said inside surface proximate, respectively, said first and second ends to space said ends from the mouthpiece, said first and second raised portions being configured to provide substantially line contact with the mouthpiece;

(E) third and fourth elongate flanges depending radially inwardly from said inside surface, said third flange being disposed intermediate between said first flange and said first raised portion, said fourth flange being disposed intermediate between said second flange and said second raised portion, each of said third and fourth flanges extending perpendicularly to said longitudinal dimension;

(F) said single strip, said flanges, said raised portions and said tabs consisting of an integral unit of flexible plastic material.

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FIG. 1

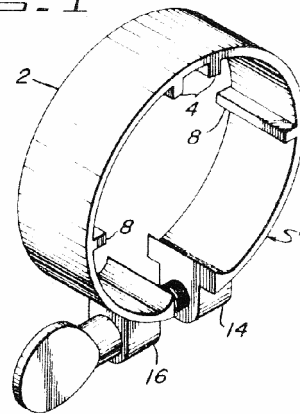
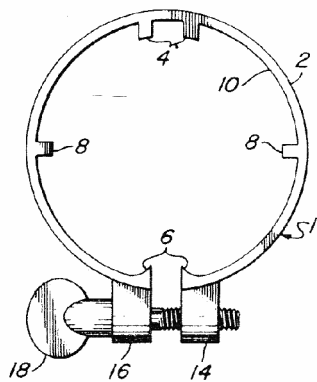


FIG. 2

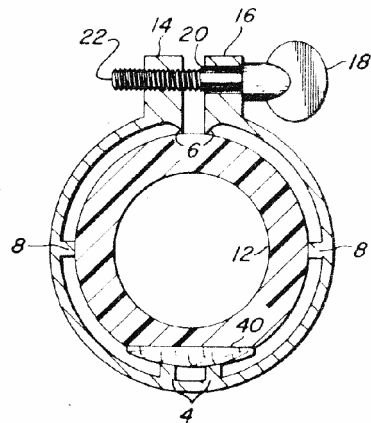
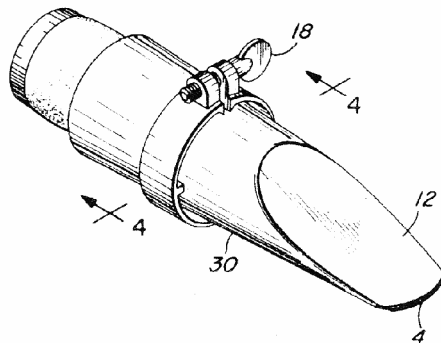


FIG. 4

FIG. 3

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