

## UNITED STATES PATENT OFFICE

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## LIGATURE FOR REED INSTRUMENTS

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11 Claims. (Cl. 84—383)

This invention relates to improvements in ligatures for reed instruments, and more particularly to single reed instruments such as clarinets and saxophones.

5 Heretofore it has been customary to employ a screw tightened ligature for holding a reed to the mouthpiece of an instrument. Such ligatures are unyielding and are capable of exerting tremendous pressure on both the reed and the mouthpiece. Consequently, use thereof can 10 crush the resilient fibers of the reed and indent the face of the reed. In addition these screw ligatures have a tendency to warp the mouthpiece by reason of the great pressure they exert, and their tight grip stifles the vibrations of both 15 reed and mouthpiece with resultant dampening or choking of the natural tone of the instrument.

It is the primary object of this invention to provide a ligature which overcomes these disadvantages.

20 A further object is to provide a ligature adapted to securely hold a reed on a mouthpiece and which will permit the reed and mouthpiece to vibrate freely.

25 A further object is to provide a ligature which will hold a reed on a mouthpiece securely and lightly to avoid crushing and indenting of the reed or warping of the mouthpiece.

30 A further object is to provide a ligature capable of stretching or yielding circumferentially to conform to the shape of the mouthpiece to which it is applied.

35 A further object is to provide a ligature having a uniform and substantially continuous or ring fit on the mouthpiece and reed.

A further object is to provide a ligature which is adjustable as to circumferential size without requiring the use of screws.

Other objects will be apparent from the description and appended claims.

40 In the drawing:

Fig. 1 is a side view of the ligature in operative relation to a reed and mouthpiece.

45 Fig. 2 is a plan view of the ligature extended in flat form.

Fig. 3 is an enlarged cross sectional view of the ligature taken on line 3—3 of Fig. 1.

Referring to the drawing which illustrates the preferred embodiment of the invention, the numeral 1 designates a conventional mouthpiece, to which a reed 2 is secured by means of ligature 3 extending around the mouthpiece and over the reed.

50 Ligature 3 preferably comprises a thin sheet of metal which has a slightly arcuate shape when

laid flat, the longitudinal edges thereof being defined by concentric arcs. One end portion 4 of the ligature has two longitudinally aligned spaced sets of spaced elongated transversely extending slots 5. The slots 5 of each set are preferably spaced apart about one-eighth of an inch. Each slot 5 is aligned with a slot of the other longitudinal set. The slots of both sets are of the same length, and their outer ends are equi-spaced from the adjacent longitudinal edge 10 of the ligature. The slots are slightly wider than the thickness of the metal. At the outer edge of portion 4 project a pair of narrow ears 6 which are bent at right angles to portion 4, said ears 6 preferably being slightly shorter than slots 5 and being spaced from each other substantially the same distance as the complementary slots of the opposed longitudinal sets 4. The width of ears 6 is preferably approximately equal to the thickness of the metal, for example about 20 .015 inch.

The opposite end portion 7 of the ligature has two longitudinal sets of slots 8 formed therein which are preferably identical to slots 5 in respect to size, location and arrangement. A transverse fitting 9 of slightly greater length than the width of the ligature is secured to the ligature adjacent to but spaced from the transverse edge of portion 7 and projects slightly at each longitudinal edge of the ligature. Fitting 9 is preferably of dished or recessed formation at its inner side whereby the portion of the ligature to which it is secured, as by rivet 10, is longitudinally curved in substantially arcuate shape having a small radius, as indicated at 11 in Fig. 3. The outer face of the fitting 9 is preferably knurled. A pair of ears 12 project from the transverse edge of portion 7 about one-eighth of an inch, said ears being slightly shorter than slots 5 and 8, and being spaced apart and from the longitudinal edges of the ligature about the same distance as aligned slots of said sets 5 and 8. Ears 12 are off-set from the ligature at 13 in a direction opposite that in which ears 6 are bent, and the dimension of the off-set substantially conforms to the thickness of the metal so that the outer faces of the ears will lie flat against the inner face of the end portion 4 when inserted through slots 5 thereof.

The portion of the ligature intermediate end portions 4 and 7 preferably constitutes approximately one-half of the total length of the ligature. At this intermediate portion are formed a plurality of spaced elongated transverse slots 14 whose ends terminate in spaced relation to the 55

longitudinal edges of the ligature. Slots 14 are preferably of a length substantially two-thirds the width of the ligature and are enlarged at 15 at their centers. Centrally between each pair of adjacent slots 14 are formed slots 16 extending transversely and inwardly from the opposite longitudinal edges of the ligature for approximately one-third the width of the ligature so that their inner ends are spaced substantially inwardly relative to the outer ends of slots 14. The edges of the ligature are notched or cut away at 17 at the outer end of each slot 16. Thus the intermediate portion of the ligature constitutes a plurality of transverse sections 18 defined by slots 16 at their ends and centrally divided by slots 14.

The ligature, formed as above described, is bent into ring form, with end portion 7 overlapping portion 4. The ring circumference desired is ascertained, and ears 12 are inserted through slots 5 in portion 4 to provide that ring size. When the ears 12 are fitted properly in the correct slots 5 with the off-sets 13 of said ears seating within said slots, the ears 6 of portion 4 may be seated in the slots 8 of portion 7 with which they register. Each of the ears has a snug fit in its receiving slot whereby the ends are securely but detachably interconnected. It will be seen that the ligature is thus circumferentially uninterrupted, and the off-sets resulting from the overlap of the ends and the seating of ears 12 are of but extremely small extent, approximately the thickness of the metal. These slight off-sets constitute the only deviation or departure from true continuous circular shape. The fitting 9 is positioned over reed 2, and the off-sets occur at opposite sides of the fitting, so the practical effect obtained is substantially the same as if the ligature was a true continuous ring.

The ligature is applied to the mouthpiece and reed by holding the latter in operative relation and sliding the ligature thereover. The mouthpiece is tapered, so the ligature will automatically seat thereon in proper relation if properly adjusted as to size and pushed to seating position. Removal of the ligature is also accomplished by sliding thereof longitudinally of the mouthpiece toward the small dimension end of the mouthpiece. The fitting 9 constitutes means against which the user may push both in applying and removing the ligature. The four point interconnection between the overlapped ligature ends afforded by the ears 8 and 12 holds the ring in proper form during the pushing operations.

The construction of the intermediate portion of the ligature with sections 18 defined by slots 14 and 16 imparts a substantial degree of longitudinal extensibility or stretch to the ligature. Thus the ligature may set itself to the mouthpiece and reed to firmly hold the same with substantially uniformly exerted pressure, without requiring that pressure to be great. Also the elasticity afforded by the construction permits full natural vibration and resultant tone qualities of the reed and mouthpiece, and avoids all possibility of crushing of the reed or distortion of the mouthpiece.

While the construction illustrated and described is preferred, it is merely illustrative of the spirit of our invention, which may be susceptible of modification with respect to the specific construc-

tions of both the interconnecting means and the extensible portion.

We claim:

1. A ligature for reed instruments comprising a sheet of metal having a longitudinal series of equi-spaced transverse slots therein at each end portion, and ears projecting from both ends of said sheet and each insertible in a slot of the opposite end portion to lock said sheet in ring form when the end portions of the sheet overlap.

2. The construction defined in claim 1 wherein the ear projecting from the overlapping end of the sheet is off-set to seat against the inner face of the overlapped end, and the opposite ear having a hooked engagement in a slot of the overlapping end.

3. The construction defined in claim 1, wherein at least one end portion of said sheet has two transversely spaced and aligned sets of slots and the opposite end of the sheet has two corresponding ears, whereby at least a three-point interlocking engagement of the overlapped end portions is provided to hold the ligature in alignment.

4. The construction defined in claim 1, and means carried by the overlapping end of said sheet for bending a part of said end to facilitate insertion of the ear of said overlapping end through the slot of the overlapped end when the sheet is bent into ring form.

5. The construction defined in claim 1, and a fitting having a recessed inner face to which the overlapping end portion of the sheet is secured to be curved thereby.

6. The construction defined in claim 1, wherein the intermediate portion of the sheet is provided with a plurality of staggered transverse slots to impart a measure of circumferential stretch and distortion to the ligature.

7. The construction defined in claim 1, wherein the intermediate portion of the sheet is provided with spaced staggered elongated slots defining a continuous narrow zigzag web rendering the strip susceptible of distortion and circumferential stretch.

8. A ligature for encircling the mouthpiece and reed of a musical instrument comprising a substantially continuous ring of thin metal having a plurality of spaced staggered elongated transverse slots therein to render the same circumferentially elastic for a firm light gripping action accommodating free vibration of reed and mouthpiece.

9. A ligature as defined in claim 8, wherein said ring is formed from a strip with its ends overlapping, and each end is provided with integral means having interlocking engagement with other end portion.

10. A ligature for encircling the mouthpiece and reed of a musical instrument comprising a band of flexible metal, and means integral therewith for adjustably interlocking the end portions thereof to provide a ring of selective diameter.

11. A ligature for encircling the mouthpiece and reed of a musical instrument comprising a band of flexible metal, said band having a configuration permitting a longitudinal yielding thereof under stress and vibration, and integral means for locking the band in ring form.

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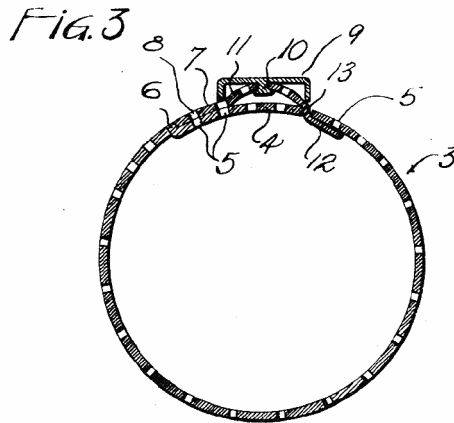
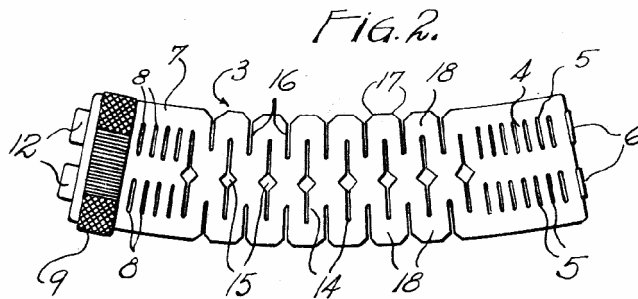
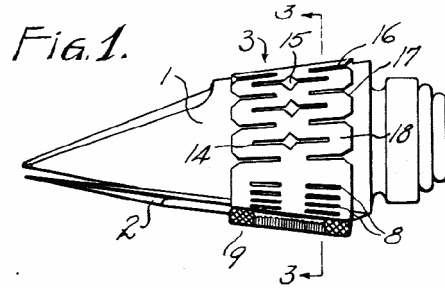
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