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W. McKEAN  
CLARINET SWAB

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Fig. 1

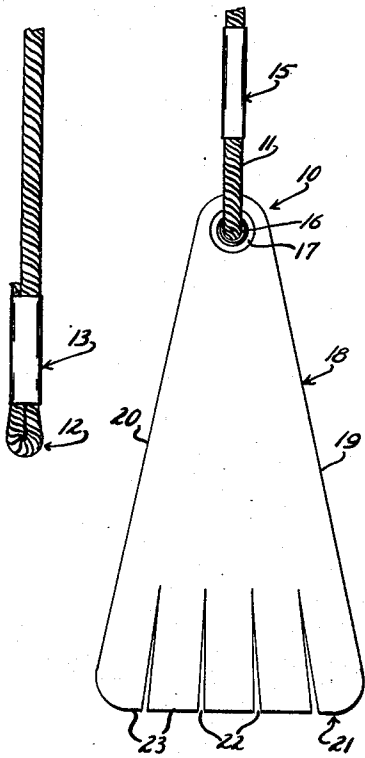


Fig. 2

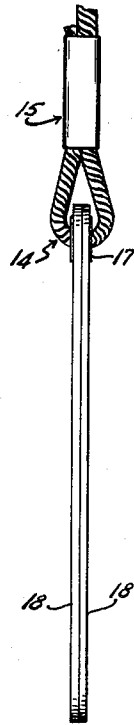


Fig. 3

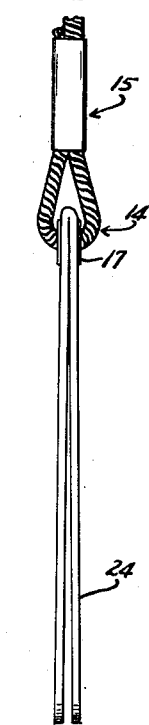
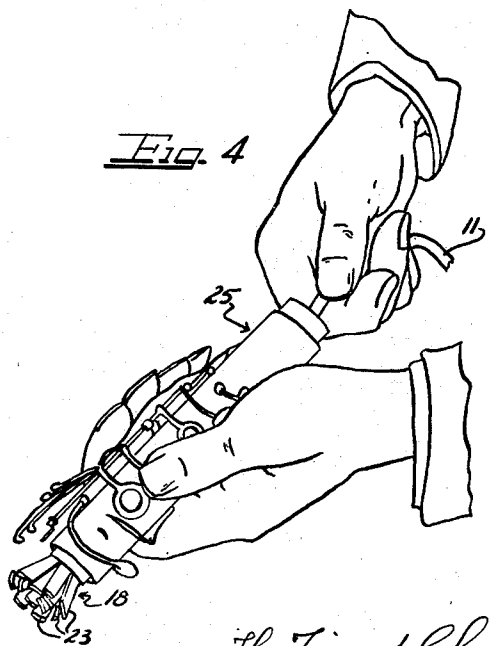


Fig. 4



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# UNITED STATES PATENT OFFICE

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## CLARINET SWAB

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The present invention relates to apparatus for removing foreign matter from the interior surfaces of tubular objects and, more particularly to a swab for the cleaning of the bores of woodwind instruments.

During the use of a woodwind instrument, moisture in the player's breath passing through the instrument condenses within the bore of the instrument and must be removed to prevent interference with the operation of the instrument. The removal of the moisture from the interior of the instrument may be accomplished by dismantling the instrument into its component parts and swabbing the bore of the instrument with a swab or other suitable means.

Several types of swabs have been proposed for removing the moisture from woodwind instruments. The swabs generally employed are merely square or rectangular patches of cloth, chamois, or other suitable absorbent material attached to a cord by means of which the patch may be drawn through the instrument. The patches being larger than the bore of the instrument, are compressed into irregular shape within the bore of the instrument and rub against the interior surfaces of the bore. Due to the irregular shape of the compressed patch, it has been impossible to effectively remove all of the moisture from the interior surface. In order to correct this inefficiency resulting from the irregular shape, it has been proposed that a conical follower in the form of a brush or rubber cone be positioned on the cord so that the patch will fold over and around the follower in the bore and assume the regular shape of the follower. This method has not solved the problem of the moisture removal, since the apparatus may be employed with only one size of bore and an excessive amount of force must be exerted on the string to pull the patch and the tightly fitting follower through the instrument.

The present invention provides a swab for use in cleaning the bores of woodwind instruments or other tubular objects comprising a cord and a patch of chamois, cloth or other flexible, non-scratching, water absorbent material attached to one end of the cord. It is preferred for use in the present invention that the patch be of generally triangular shape and that the patch be slit inwardly from a trailing edge to form a plurality of tabs or wiping surfaces. Where the patch is of triangular shape, it is desirable that the patch be attached to the cord at a point adjacent one of the apices of the triangle, and that the patch be slit inwardly from the edge opposite the apex. The patch may suitably be formed as an isosceles triangle with two identical sides

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longer than the third slit side. The patch is slit inwardly from the short side of the triangle at a plurality of points for a distance of from one-quarter to one-half the length of the patch to provide a plurality of tabs.

I have found that by the use of the patch of triangular shape, slit as above described, a more efficient swabbing action may be obtained. The patch, due to the triangular shape and the plurality of tabs formed along the trailing edge, assumes an almost perfect conical shape when pulled through the bore of the instrument by means of the cord. The improved cleaning efficiency obtained by the use of the swab of the present invention results from the conical shape of the patch which presents a plurality of wiping surfaces, formed by the tabs, which surfaces contact the entire interior periphery of the instrument bore and effectively remove all of the moisture adhering thereto.

It is, therefore, an important object of the present invention to provide a clarinet swab comprising a cord and a patch attached thereto having its trailing edge slit to form a plurality of tabs, the tab construction permitting the patch to assume a conical shape presenting a plurality of wiping surfaces which contact the entire inner periphery of the instrument bore when pulled therethrough.

It is a further important object of the present invention to provide a clarinet swab comprising a cord and a triangular patch attached thereto adjacent one of its apices and having the edge opposite the point of attachment slit to form a plurality of tabs, the slit construction permitting the patch to assume a substantially conical form contacting the interior surfaces of the instrument to remove adherent moisture therefrom.

It is a further important object of the present invention to provide a clarinet swab comprising a cord and a triangular patch attached thereto adjacent one of the apices and having the edge opposite said one apex slit to form a plurality of tabs, said tab construction permitting the patch to present a uniform peripheral wiping surface contacting the inner surface of the clarinet when pulled therethrough.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

On the drawings:

Figure 1 is an elevational view of a clarinet swab of the present invention;

Figure 2 is a front elevational view of the swab as shown in Figure 1;

Figure 3 is a front elevational view of a modi-

fied form of the clarinet swab of the present invention; and

Figure 4 is a perspective view illustrating the swab of the present invention in use and showing the conical configuration of the swab when pulled through the bore of the clarinet.

As shown on the drawings:

In Figure 1, reference numeral 10 refers generally to a clarinet swab of the present invention. The cord 11 of the swab 10 may be formed of any suitable moisture-resistant material such as nylon. One end of the cord 11 is looped as at 12, the free end being secured as at 13 by a plastic composition applied to the cord. As is further shown in Figure 1, the other end of the cord 11 is looped as at 14 (see Fig. 2) and is secured at 15.

As illustrated in Figure 1, the looped end 14 (see Fig. 2) of cord 11 is attached to a patch 18 by being passed through an aperture 16 fitted with a grommet 17. The patch 18 is generally triangular in shape. Aperture 16 is located at the apex of the two longer sides 19 and 20 of the triangular patch 18, and the edge 21 opposite the aperture 16 is provided with a plurality of slits 22 to form a plurality of tabs 23. As may be seen in Figure 1, the slits 22 extend inwardly toward the center of the patch for a distance of approximately one-quarter to one-half the length of the patch 18.

As may be seen in Figure 2, two patches may be employed, the two patches being of identical form and being joined only at their upper edges by a common grommet 17 which passes through both patches. Alternatively, a patch 24 may be provided by so cutting the patch blank that two generally triangular patches, such as patch 18, are joined at the apex and are merely folded over as shown in Figure 3 to form what is actually a pair of joined patches similar in form to patch 18.

To remove the moisture and other foreign material from the interior of a woodwind instrument, the instrument is first dismantled into its component parts and the parts are each separately cleaned by the use of the swab of the present invention. As illustrated in Figure 4, the swabbing operation is very simple. The operator merely holds the clarinet part 25 in one hand and drops the doubled free end 12 of the cord 11 through the bore of the clarinet and grasps the extending end in his other hand. The cord 11 is then pulled through the bore of the instrument, thus pulling the patch 18 therethrough. As shown in Figure 4, the tabs on the trailing edge of the patches tend to flare outwardly into the general shape of a cone upon being pulled through the bore of the instrument. The tabs thus form a generally circular wiping surface which contacts the bore of the instrument as the swab is forced therethrough. The base of the cone formed by the patch is of greater diameter than the bore of the instrument, the patch being compressed as it is pulled thru the bore. The compression of the patch causes the tabs in the outer periphery of the cone base to bear tightly against the bore surface.

Thus it may be seen that I have provided an improved clarinet swab by means of which moisture formed during the playing of the instrument, and other foreign matter may be removed from the bore of the instrument by merely pulling the swab therethrough. The swab of the present invention, by reason of its slitted and tabbed construction assumes a conical form

when it is pulled through the bore of the instrument and presents a uniform peripheral surface which contacts the inner surface of the instrument to effectively remove the moisture and other foreign matter adhering thereto.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

I claim as my invention:

1. A swab for woodwind instruments and the like comprising a triangularly shaped patch of flexible water absorbent material having slits extending inwardly from one edge toward the opposite apex and a cord attached to said apex, said slits providing tabs, which tend to flare outwardly into a generally conical form when the patch is pulled through the bore of an instrument.

2. A swab for woodwind instruments and the like comprising a triangularly shaped patch of flexible water absorbent material having slits extending inwardly from one edge toward the opposite apex and a cord attached to said apex, said slits providing tabs on the trailing edge of said patch which form a generally circular wiping surface in contact with the bore of an instrument when pulled therethrough.

3. A swab for woodwind instruments and the like comprising a triangularly shaped patch of flexible water absorbent material having slits extending inwardly from one edge toward the opposite apex and a cord attached to said apex, said slits providing tabs on the trailing edge of said patch which tend to flare outwardly into a generally conical form when the patch is pulled through the bore of an instrument.

4. A swab for woodwind instruments and the like comprising a pair of triangular shaped patches of flexible water absorbent material, each of said patches having slits extending inwardly from one edge toward the opposite apex and a cord attached to said apices, said slits providing tabs which tend to flare outwardly into a generally conical form when the patches are pulled through the bore of an instrument.

5. A swab for woodwind instruments and the like comprising a patch of flexible water absorbent material folded into a triangular configuration and having slits extending inwardly from one edge toward the opposite apex, and a cord attached to said apex, said slits providing tabs on the trailing edge of said patch which tend to flare outwardly to form a generally circular wiping surface for contact with the bore of an instrument when pulled therethrough.

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