April 29, 1952 J. W. CAUFFMAN 2,594,869

CUP MOUTHPIECE FOR MUSICAL INSTRUMENTS

Filed Aug. 2, 1949

Fig. 1.

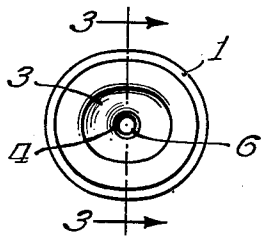


Fig. 2.

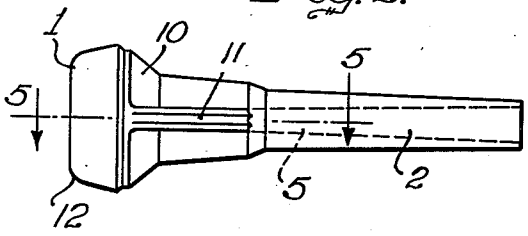


Fig. 3.

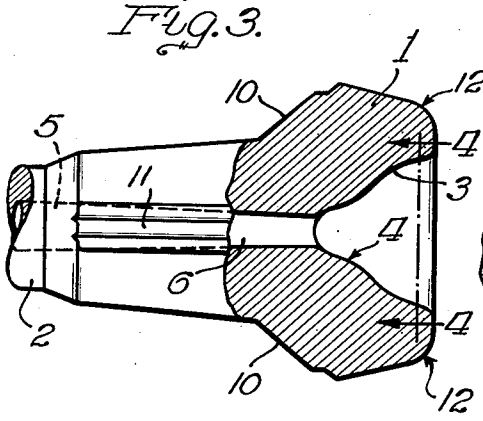


Fig. 4.

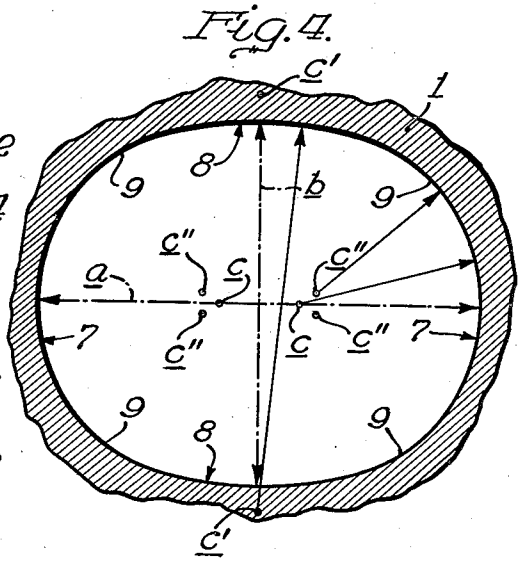


Fig. 5.

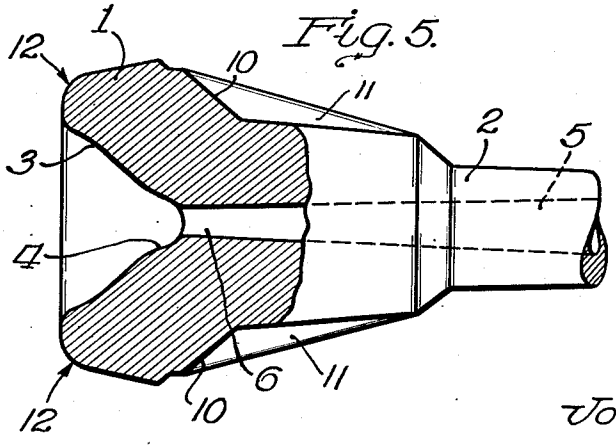
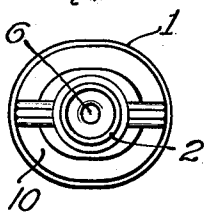


Fig. 6.



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CUP MOUTHPIECE FOR MUSICAL INSTRUMENTS

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2 Claims. (Cl. 84—398)

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This invention relates to an improved mouthpiece for trumpets and similar musical instruments, such as trombones, French horns, base horns, and cornets which are of the type employing a cup mouthpiece as distinguished from a reed mouthpiece.

One of the main objects of the present invention is to provide an improved cup type mouthpiece of the character described, which will provide good intonation in all registers of the instrument; also an improved cup type mouthpiece which will improve the range of the instrument, and the quality of the notes over the entire range of the instrument.

Another object of the invention is to provide an improved cup type mouthpiece which will fit better the mouth of the player, and which will provide better lip ease, and better lip grip.

Another object of the invention is to provide an improved cup type mouthpiece which will present corresponding flat curves or almost straight lines to both the upper and lower lips of the player, and curves at opposite ends of the diameter of greater length which are arched about spaced centers on the longer diameter of the cup portion of the mouthpiece.

Another object of the invention is to provide a cup type mouthpiece having a double cup formation of improved form.

Another object of the invention is to provide an improved cup type mouthpiece of the character described having various features of novelty and advantages, and which is particularly characterized by the improvements set forth and by its simplicity in construction and its effectiveness in use.

Further objects and advantages of the invention will appear from the following detailed description taken in connection with the accompanying drawing which shows an illustrative embodiment of a cup type mouthpiece embodying the present invention.

In the drawing:

Figure 1 is a front elevational view of a mouthpiece embodying the present invention;

Figure 2 is a side elevational view of the mouthpiece shown in Figure 1;

Figure 3 is a view, on an enlarged scale, partially in section and partially in elevation and taken on the line 3—3 of Figure 1;

Figure 4 is a fragmentary sectional view taken on the line 4—4 of Figure 3, with the opening from the inner end of the cup to the throat of the mouthpiece omitted for clarity.

Figure 5 is a fragmentary view partially in section and partially in elevation and taken on the line 5—5 of Figure 2; and

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Figure 6 is a rear elevational view of the mouthpiece as shown in Figures 1 and 2.

Referring now to the drawing, the mouthpiece selected for illustration comprises a cup portion 1 having an integral tubular neck 2 extending from the inner end of the cup portion.

The device may be formed, for example, of brass or other suitable material, and may be plated, for example, with silver or other suitable plating material as usual with such devices. The neck 2 is preferably externally tapered, for example, about .050 to an inch to fit in the bore of the trumpet or other instrument, as well understood in the art.

The interior of the cup portion 1 is of double cup formation having an outer cup 3 and a smaller cup 4 of contour corresponding with the contour of the cup 3 and disposed at the inner end of the cup 3. The neck 2 has an internal bore 5 provided at its outer end with a throat 6 which opens from the smaller cup 4 at the axis of the mouthpiece.

The internal diameter of the cup 3 in one direction at right angles to the axis of the mouthpiece (shown by the dot and dash line *a* in Figure 4) is of greater length than a second diameter (shown by the dot and dash line *b* in Figure 4) taken at substantially right angles to the first-mentioned diameter *a*. In one embodiment of the invention which is operable with the advantages set forth, the first-mentioned diameter *a* is approximately $\frac{11}{16}$ of an inch and the second diameter *b* is approximately $\frac{9}{16}$ of an inch. These particular dimensions may, of course, vary, depending upon the size of the mouthpiece, but the proportions, approximately as set forth herein, are preferably retained.

The inner periphery of the cup 3 at opposite ends of the first mentioned diameter *a* is arched at 7 about spaced centers *c* on the first-mentioned diameter *a*. At opposite ends of the second diameter *b* the inner surfaces of the cup 3 are of corresponding and comparatively flat curvatures as shown at 8 in Figure 4. In the previously mentioned embodiment of the invention, the radii of the arcs 7 are approximately $\frac{3}{32}$ of an inch, and the radii of the arcs 8 struck, for example, from centers *c'* (Figure 4) are approximately .600 of an inch.

The arcuate surfaces 7 are connected with the arcuate surfaces 8 by arcuate surfaces 9 struck from centers *c''* (Figure 4) and of a radii of about ¼ of an inch. As previously stated, the

contour of the smaller cup 4 corresponds, in general, with the contour of the cup 3, but, of course, is smaller than the cup 3. It is contemplated within the scope of the present invention to omit the smaller cup 4, and to use only the cup 3 with the throat 6 opening from this cup 3 at the axis of the mouthpiece.

The inner or rear end of the cup part 1 is shown tapered externally at 10 and provided with diametrically opposite integral and longitudinally extending ribs 11. The name and/or trade-mark of the manufacturer or other indicia may be placed, for example, on the tapered surface 10.

It has been found by actual operation of a mouthpiece embodying the present invention that good intonation is obtained in all registers of the instrument; that the range of the instrument is increased; that the quality of the notes is improved over the entire range of the instrument; that the mouthpiece better fits the mouth of the player and provides better lip ease and better lip grip; and that the corresponding flat curves or almost straight lines which are presented to both the upper and lower lips of the player, and particularly with the opposite ends arched about spaced centers approximately as set forth, provide new and highly advantageous results. It is understood, of course, that the outer contour of the mouthpiece, as indicated at 12 in Figure 3, follows in general the inner contour of the cup.

The embodiment of the invention shown in the drawing is for illustrative purposes only, and it is to be expressly understood that said drawing and the accompanying specification are not to be construed as a definition of the limits or scope of the invention, reference being had to the appended claims for that purpose.

I claim:

1. A cup mouthpiece of the character set forth comprising a unitary body portion having an integral tubular neck extending from its inner end, said body portion having opening from its outer end a first chamber having a first diameter taken in one direction at right angles to the direction of the length of the mouthpiece of greater length than a second diameter taken at substantially right angles to the first-mentioned diameter, the inner surface of said first chamber at the ends of said first diameter being curved about radii of lengths less than one-half said first diameter, the inner surface of said chamber at the ends of said second diameter being curved about radii of lengths greater than said second diameter, said chamber diminishing in area inwardly of the mouthpiece but maintaining the same general contour and opening at its inner end into a second chamber coaxial with and of smaller area than said first chamber, said second chamber being of smaller size but of the same general contour as said first chamber whereby to reduce but not substantially to change the outer contour of the air column as it passes from the inner end of said first chamber to said second chamber, and said second chamber diminishing in area inwardly of the mouthpiece and opening at its inner end into a throat which opens into the hollow interior of said neck.

2. A cup mouthpiece according to claim 1 wherein the mouthpiece has an inner curved surface of reversed curvature which merges at one end with the reduced inner end of the first chamber and at its opposite end with the enlarged outer end of the second chamber; the hollow interior of the neck tapering to enlarged diameter at its inner end.

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The following references are of record in the file of this patent:

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24,526	Great Britain	of 1907