

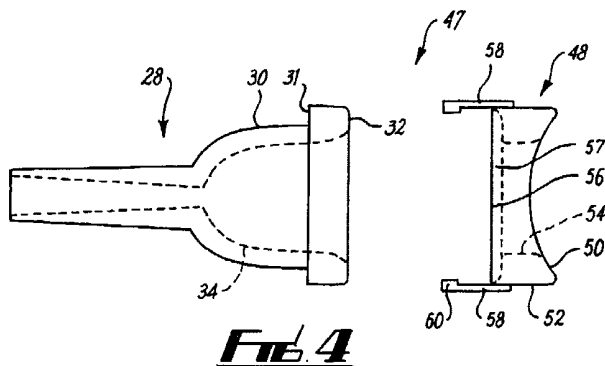
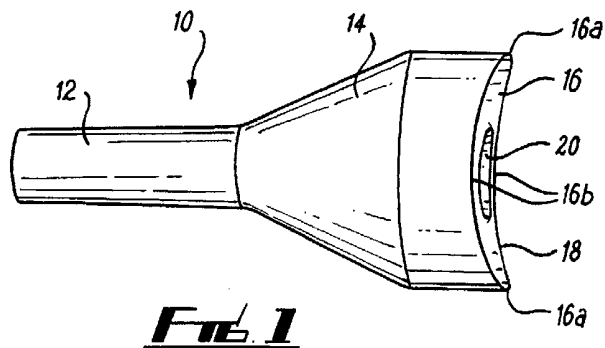
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(72) Inventor(s): Anthony George Barrett	(58) Field of Search: UK CL (Edition V) G5J INT CL <sup>7</sup> G10D Other ONLINE DATABASES: WPI, EPODOC, JAPIO
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(54) Abstract Title: Mouthpiece with inclined rim

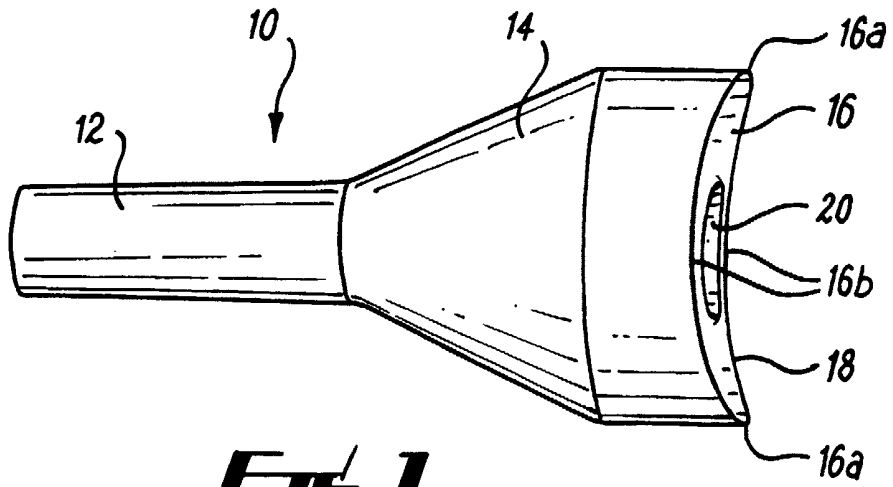
(57) A mouthpiece 10, 28 for a brass instrument having a rim 16, 50 inclined towards a shank 12. The rim can be provided by machining an existing mouthpiece or by securing a rim attachment 48 thereon. The inclined rim provides a surface in the shape of a dish or shallow cone, with little or no exterior flat surface as in traditional brass instrument mouthpieces. A player's lips contact the inclined surface. For comfort, only part of the rim 16a, 16b may be inclined. The removable rim attachment 48 may be held on to the cup 30 with resilient arms 58 or a screw thread (66, fig 5).



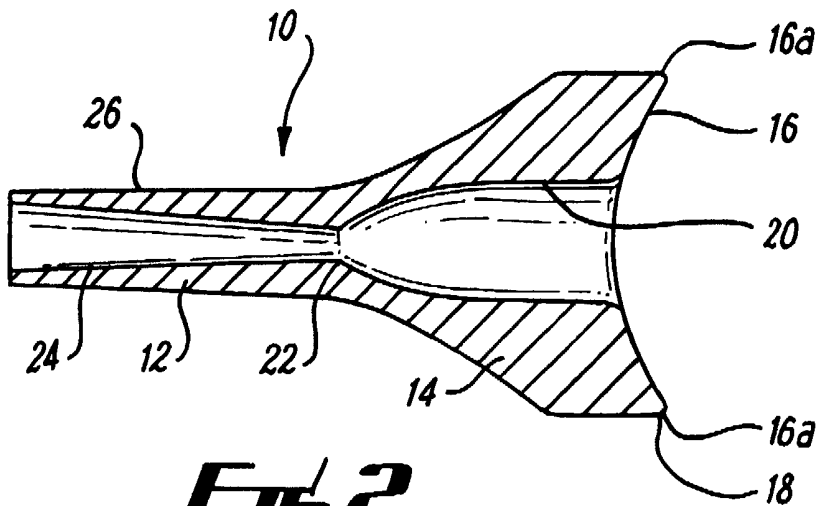
GB 2 388 240 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

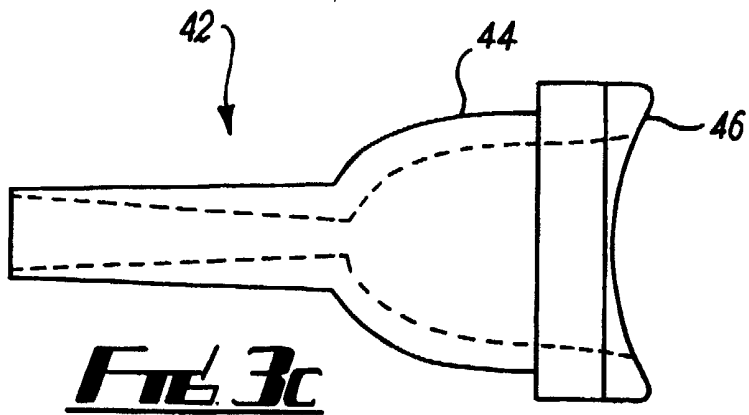
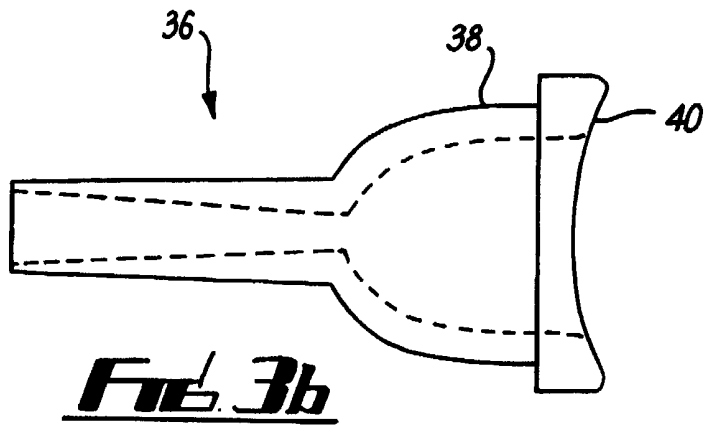
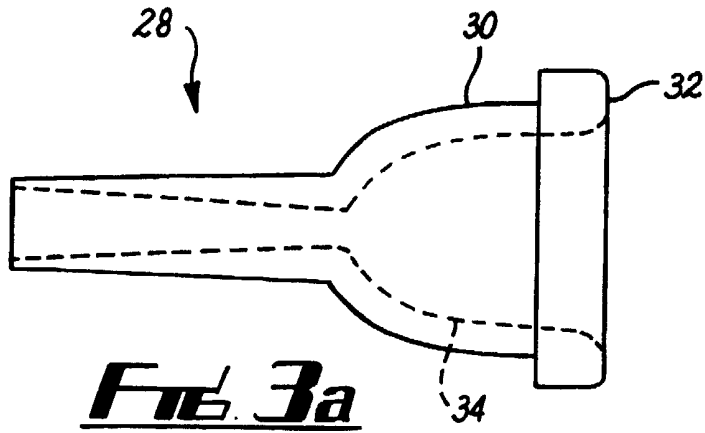
The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

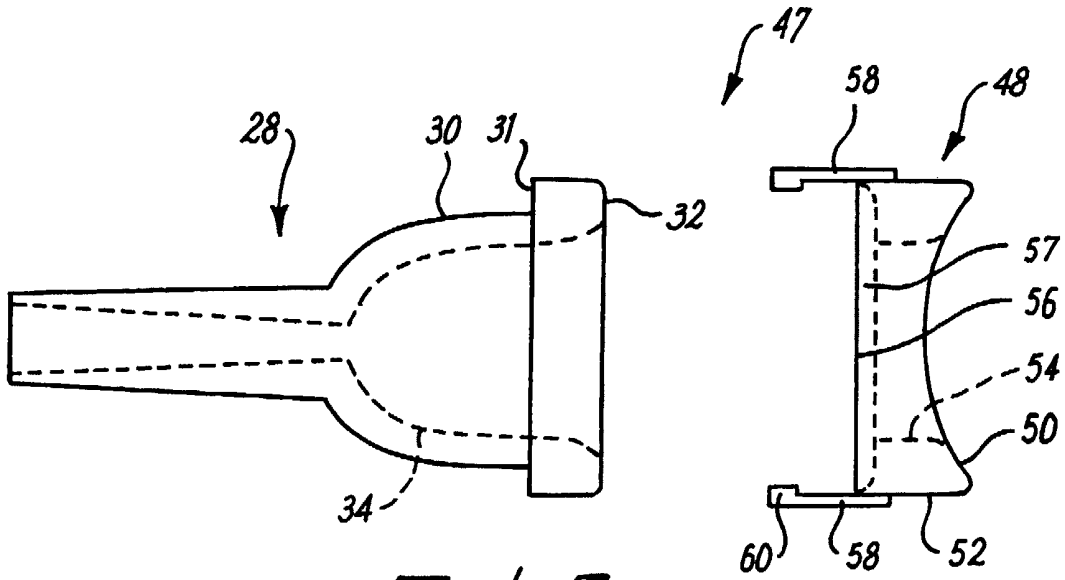


**FIG. 1**

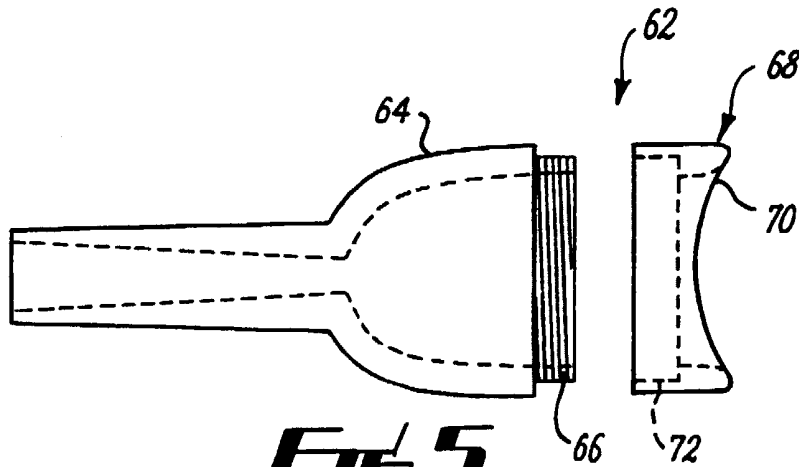


**FIG. 2**





**FIG. 4**



**FIG. 5**

**Mouthpiece**

The present invention relates to mouthpieces, particularly but not exclusively to mouthpieces for brass musical instruments.

Mouthpieces of brass instruments are made in various sizes to suit the characteristics of the individual player and the sound quality desired. In order to produce notes on the instrument a player tightens his lips to create a small opening and then forces air through the hole produced (known as the embouchure) to produce a vibration of the lips. The mouthpiece is used to connect the player's embouchure to the instrument in order to transmit the vibrations and produce a musical note. The player uses controlled pressure from the mouthpiece against his lips to create a seal. If too much pressure is used a reduction in blood flow will occur within the lip muscles. This reduction in blood flow causes tiredness of the lips and consequently reduces the time a player can play for and the quality of performance. Prolonged or excessive pressure will cause pain and in extreme cases cause permanent damage and possibly finish a musician's career.

According to the present invention there is provided a mouthpiece comprising a shank with a cup at one end, the cup including a rim inclined towards the shank from an outer edge of the rim.

Preferably the rim is inclined with a flat or curved profile towards the shank. The rim may be inclined whereby the rim has a surface consistent with a dish or cone surface centred upon the throat. The rim may be inclined whereby the rim has a surface consistent with a cylinder of larger radius than the rim lying on the rim transversely to the longitudinal axis of the mouthpiece.

Preferably the mouthpiece is unitarily formed and may be cast or machined.

Preferably the mouthpiece includes a cup and a rim attachment, the rim

being provided on the rim attachment. The rim attachment may be mounted on the cup by means of an adhesive. Preferably the rim attachment and the cup are provided with releasable mounting means. The cup may be part of a conventional mouthpiece. The mounting means may be clip means and may be at least two resilient arms mounted on the rim attachment for co-operation with a projection means on the cup. Preferably two arms are mounted on the rim attachment. Alternatively, the mounting means may be a screw means. The body portion may be provided with an external screw thread and the attachment portion may be provided with a co-operating internal screw thread.

The mouthpiece may be made from one or more of metal, plastic, wood, porcelain or glass. The rim attachment is preferably plastic.

Also in accordance with the present invention there is provided a rim attachment for a mouthpiece, the attachment including a rim inclined from outer edge of the rim when in use towards a shank of the mouthpiece.

Preferably the rim attachment includes mounting means for mounting on an existing mouthpiece or a cup of a mouthpiece.

An embodiment of the invention will now be described by way of example only and with reference to the accompanying drawings, in which:-

Fig. 1 shows a perspective view of a mouthpiece;

Fig. 2 shows a cross-sectional view through the mouthpiece of Fig. 1;

Fig. 3a shows a side view of a conventional mouthpiece;

Fig. 3b shows a side view of a second embodiment of the invention in which the mouthpiece of Fig. 3a has been re-profiled;

Fig. 3c shows a side view of a third embodiment of the invention in which the mouthpiece of Fig. 3a has been re-profiled;

Fig. 4 shows a side view of an existing mouthpiece together with an attachment portion according to a fourth embodiment of the invention; and

Fig. 5 shows a mouthpiece having a screw fit attachment portion according to a fifth embodiment of the invention.

Figs. 1 and 2 show a mouthpiece 10 having a shank 12 for insertion into a pipe of a brass instrument, a cup 14, and a rim 16 which in use interfaces with a player's lips and has an outer edge 18. Air is blown by a user through the shank 12 into the pipe of the brass instrument.

The internal surface 20 of the cup 14 may be of any known profile chosen according to the requirements of the player. At the inner end of the internal cup surface 20 is a throat 22 in the form of a venturi. The throat 22 opens into a tapered bore 24 formed within the shank 14, the bore 24 widening in the direction away from the cup 14. The external surface 26 of the shank 12 has a taper widening towards the cup 14, and is an industry standard according to the instrument that it is designed for.

The rim 16 is shaped to having two high points 16a upon its outer edge and two low points 16b. The rim 16 is shaped such that if a cylinder of larger radius than that of the external radius of the rim 16 were to be placed thereon transversely to the longitudinal axis of the mouthpiece, the rim 16 would lie on the surface of this cylinder. However, the profile of the rim 16 may vary in dimensions according to the shape of the player's embouchure and is referred to in this specification generally as a concave surface.

The mouthpiece may be manufactured by means of a casting process or by means of a computer numerical control lathe having a multiple axis machining facility.

In use the player places his embouchure against the rim 16 of the mouthpiece 10. Owing to the concave shape of the rim 16, the contact between the lips of the player and the rim 16 is relatively even. This even contact means that less pressure is required to create a seal between the lips of a player and the rim 16. The even distribution of reduced pressure enables the blood to flow at a more natural rate around the lip muscles thus allowing the player to practice or perform for long periods without tiredness. If excessive pressure is used with the new concave rim, tiredness will still be a factor but will happen at a much slower rate and the evenness of pressure may reduce the likelihood of

lasting damage.

Fig. 3a shows a conventional mouthpiece 28 which can be modified to produce the mouthpieces 36 and 42 shown in Figs. 3b and 3c. Mouthpiece 28 has a cup 30 having a rim 32 and an internal cup surface 34.

Fig. 3b shows a mouthpiece 36 that has been produced from a conventional mouthpiece 28 by cutting away the cup 30 to form a modified cup 38 having a concave rim 40. Fig. 3c shows a mouthpiece 42 that has been produced from a conventional mouthpiece 28 by building up the cup 30 to form a modified cup 44 having a concave rim 46. Mouthpieces 36 and 42 may both be subsequently re-plated if desired.

Fig. 4 shows a mouthpiece 47 formed by a conventional mouthpiece 28 to which a rim attachment 48 is mounted. The cup 30 of the mouthpiece 28 is provided with a step 31 on its external surface. The rim attachment 48 has a rim 50, a cylindrical external surface 52, a cylindrical internal surface 54 corresponding with the internal cup surface 34 of the mouthpiece 28, and a rear face 56. A recess 57 is provided in the rear face 56. Two resilient arms 58 are mounted diametrically opposite each other on the external surface 52 and each has a projection 60. Thus, the attachment 48 is stably attached and secured to the mouthpiece 47.

In use, as the rim attachment 48 is moved towards the mouthpiece 28, the arms 58 are forced outwardly by the cup 30 such that the projections 60 move over the cup 30 and latch behind the step 31. At this position the rim 32 of the mouthpiece 28 is seated in the recess 56 of the rim attachment 48 and the internal cup surface 34 and the internal surface 54 are aligned to form a substantially continuous surface.

Fig. 5 shows a further modified mouthpiece 62 comprising a cup 64 provided with an external screw thread 66 and a rim attachment 68 having a concave rim 70 provided with a corresponding internal thread 72. In use the rim attachment 68 is screwed onto the cup 64.



Various modification can be made without departing from the scope of the present invention. For example, the mouthpiece may have any internal or external cup shape or shank shape, and may therefore be designed for use with any brass instrument such as a trombone, trumpet, tuba, French horn or euphonium. Other methods of mounting a rim attachment according to the present invention to a cup or conventional mouthpiece may be used, such as fixing a rim attachment by means of adhesive to the conventional mouthpiece.

The mouthpieces and the rim attachments may be made from any suitable material or combination of materials such as metal, plastic, wood, porcelain or glass. Plastic would be particularly suitable for the rim or rim attachment because of its pliable/flexible nature, and because it has a lower conductivity than metal so would not feel as cold to the lips at the start of a playing session and would warm up more quickly.

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

**CLAIMS**

- 5 1. A mouthpiece comprising a shank with a cup at one end, the cup including a rim with at least part of that rim inclined towards the shank from an outer edge of the rim.
- 10 2. A mouthpiece as claimed in claim wherein only a segment of the rim is inclined.
3. A mouthpiece as claimed in claim 1 or claim 2 wherein the rim is inclined with a flat or curved profile towards the shank.
- 15 4. A mouthpiece as claimed in any of claims 1 to 3 wherein the rim is inclined whereby the rim has a surface consistent with a dish or cone surface centred upon a throat of the shank.
- 20 5. A mouthpiece as claimed in any preceding claim wherein the rim is inclined whereby the rim has a surface consistent with a cylinder of larger radius than the rim lying on the rim transversely to the longitudinal axis of the mouthpiece.
- 25 6. A mouthpiece as claimed in any preceding claim wherein the mouthpiece is unitarily formed.
7. A mouthpiece as claimed in claim 6 wherein the mouthpiece is cast or machined.
- 30 8. A mouthpiece as claimed in any of claims 1 to 5 wherein the mouthpiece includes a cup and a rim attachment, the rim being provided on the rim attachment.
9. A mouthpiece as claimed in claim 8 wherein the rim attachment is mounted on the cup by means of an adhesive.

10. A mouthpiece as claimed in claim 8 wherein the rim attachment and the cup are provided with releasable mounting means.
- 5 11. A mouthpiece as claimed in claim 10 wherein the mounting means comprises clip means and has at least two resilient arms mounted on the rim attachment for co-operation with a projection means on the cup.
- 10 12. A mouthpiece as claimed in any of claims 8 to 11 wherein the cup is a part of a conventional mouthpiece.
13. A mouthpiece as claimed in any of claims 11 or 12 wherein the two arms are mounted on the rim attachment.
- 15 14. A mouthpiece as claimed in claim 10 and any claim dependent thereon wherein the mounting means is a screw means.
- 20 15. A mouthpiece as claimed in any of claims 8 to 14 wherein a body portion is provided with an external screw thread and the attachment portion is provided with a co-operating internal screw thread.
- 25 16. A mouthpiece as claimed in any of claims 8 to 15 wherein the rim attachment is formed from plastic material.
17. A mouthpiece as claimed in any preceding claim wherein the mouthpiece is made from one or more of the following: metal, plastic, wood, porcelain or glass.
- 30 18. A mouthpiece substantially as hereinbefore described with reference to Figures 1 and 2 or Figure 3c or Figure 4 or Figure 5 or Figures 6 and 7 of the accompanying drawings.
19. A rim attachment for a mouthpiece, the attachment including a rim inclined from outer edge of the rim when in use towards a shank of the mouthpiece.

20. An attachment as claimed in claim 19 wherein the rim attachment includes mounting means for mounting on an existing mouthpiece or a cup of a mouthpiece.

5 21. A rim attachment for a mouthpiece substantially as hereinbefore described with reference to Figure 4 or Figure 5.

22. Any novel subject matter or combination including novel subject matter disclosed herein, whether or not within the scope of or relating to the same  
10 invention as any of the preceding claims.



INVESTOR IN PEOPLE

Application No: GB 0209923.2  
Claims searched: 1-20

9

Examiner: Rosalind Lyon  
Date of search: 30 July 2003

### Patents Act 1977 : Search Report under Section 17

#### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
X	1, 3, 8, 10, 12, 14, 15, 17, 19, 20	ES 2078191 A1	HONIBA See especially translation of abstract and figures.
X	1, 2, 3, 6, 7, 17	US 5353673	LYNCH See especially abstract and figures.
X	1, 3, 6, 7, 17	US 3611860	TICHENOR See especially abstract and figure 3.
X	1, 3, 6, 7, 17	GB 1388389 A	SANDERS See especially lines 29-37 and figures.
X	1, 3, 4, 6, 7, 17	FR 2661768	HEINRICH See especially translation of abstract and figures.
X	1, 2, 3, 6, 7, 17	GB 668148 A	MORGAN See whole document

#### Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

#### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>v</sup>:

G5J

Worldwide search of patent documents classified in the following areas of the IPC<sup>7</sup>:

G10D

The following online and other databases have been used in the preparation of this search report:

WPI, EPODOC, JAPIO