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Beversdorf

[11] **3,842,706**

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[54] **MUTE HAVING MEANS FOR ELIMINATING UNRESPONSIVE NOTES IN BRASS INSTRUMENTS**

[76] Inventor: **Samuel Thomas Beversdorf,** Rt. 12 Cedarcrest, Bloomington, Ind. 47401

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[52] **U.S. Cl.** **84/400**
[51] **Int. Cl.** **G10d 9/06**
[58] **Field of Search** 84/400

[56] **References Cited**

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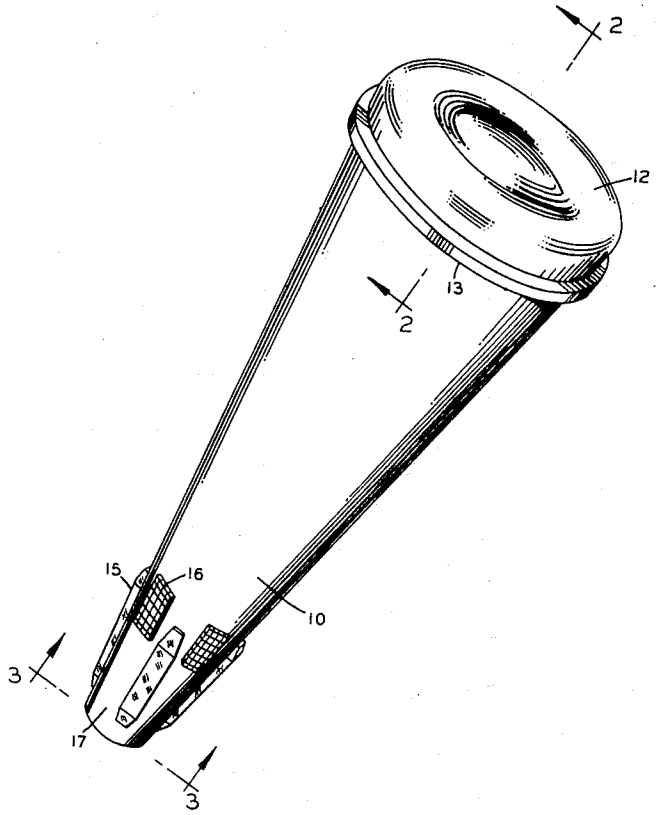
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Primary Examiner—Lawrence R. Franklin
Attorney, Agent, or Firm—Mahoney, Miller & Stebens

[57] **ABSTRACT**

A mute for use in brass instruments having means for spacing it from the bell of the instrument to provide wind passages therebetween and having according to this invention absorbent acoustical material in the passages at the nodal points between the mute and the bell to dampen out certain phenomena.

5 Claims, 5 Drawing Figures



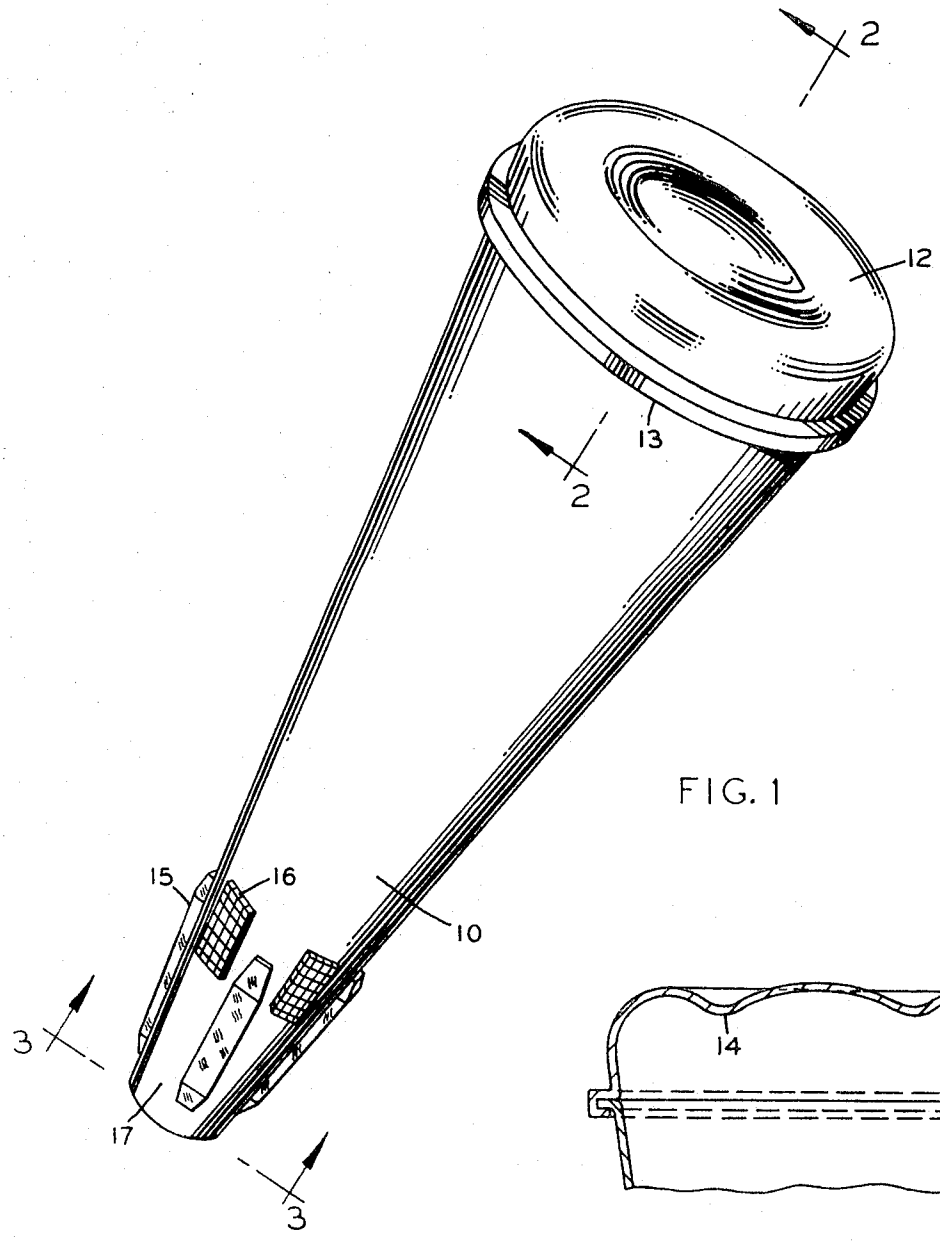


FIG. 1

FIG. 2

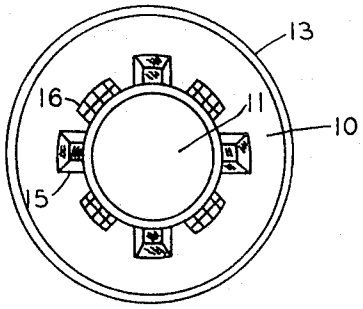


FIG. 3

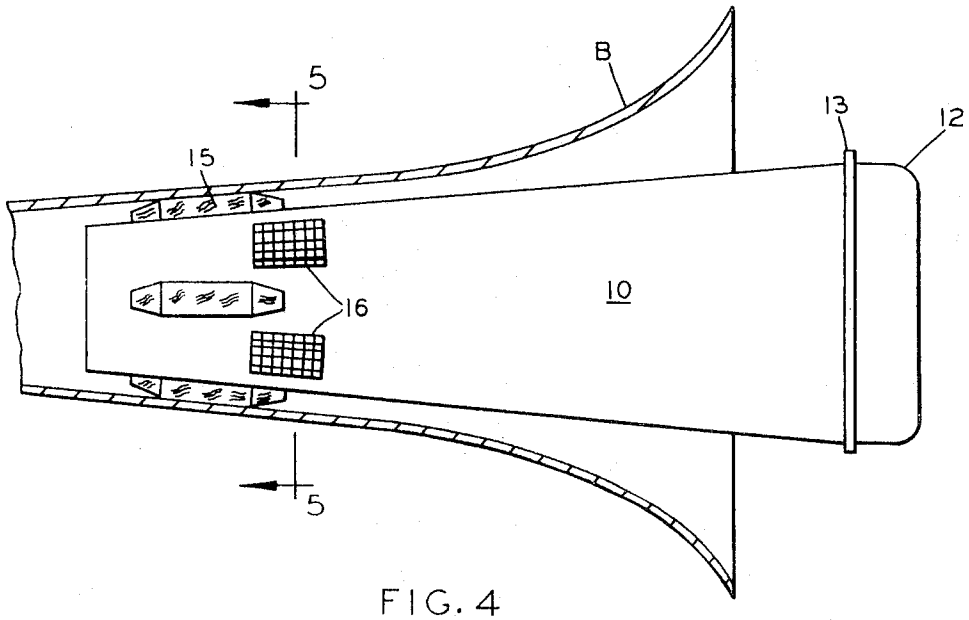


FIG. 4

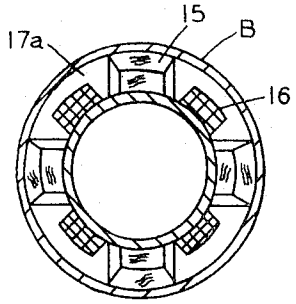


FIG. 5

MUTE HAVING MEANS FOR ELIMINATING UNRESPONSIVE NOTES IN BRASS INSTRUMENTS

BACKGROUND OF THE INVENTION

Various mutes have been provided in the past for brass instruments. These mutes have been constructed in the usual way with a tapered body having a smaller open inner end and a larger closed outer end. Adjacent the inner end there are usually provided longitudinally extending spacer strips at angularly spaced positions around the circumference of the body to provide the necessary wind passages between the mute and the bell of the instrument after the smaller end is inserted and fitted in the bell. With this type of mute, standing waves created by interfering resonances between the mute and the instruments cause what is known as "wolf tones" or "stuffy notes". The standing waves so formed create a rescinding node back through the instrument which causes certain frequencies to be partially or completely unresponsive.

SUMMARY OF THE INVENTION

The present invention eliminates the wolf tones or stuffy and unresponsive notes by placing absorbent acoustical material at the nodal points in the wind passages between the mute and the bell of the instrument. This dampens out the rescinding node which previously formed and made the instrument partially or completely unresponsive to certain frequencies.

BRIEF DESCRIPTION OF THE DRAWINGS

The best mode contemplated in carrying out this invention is illustrated in the accompanying drawings in which:

FIG. **1** is a perspective view of the mute provided with the means of this invention for eliminating the unresponsive notes.

FIG. **2** is a partial axial sectional view taken along line **2—2** of FIG. **1.**

FIG. **3** is an end elevational view taken from the position indicated at line **3—3** of FIG. **1.**

FIG. **4** is an axial sectional view of the bell of a brass instrument such as a trombone with a mute provided with the means of this invention.

FIG. **5** is a transverse sectional view taken along line **5—5** of FIG. **4.**

DETAILED DESCRIPTION OF THE INVENTION

With reference to the drawings, the structure of a mute to which this invention is applied is indicated in detail in FIGS. **1** to **3** where it is shown before it is positioned in the brass instrument which is shown as the bell of a trombone but may be the bell of other brass instruments. It includes a hollow body **10** of tapering tubular form which has the smaller open end **11** and the larger end closed by a cap **12** which is seamed to the body at an annular seam **13.** The outer wall of the cap is shown with an annular groove on its exterior which produces an internal annular rib **14.** This is merely an example of one form of mute to which this invention is applicable. The mute may be formed of various materials but commonly is of aluminum.

The smaller end of the body **10,** which is to be inserted in the bell of the instrument, is provided with suitable spacing means in the usual manner. In FIG. **1,** the spacing means are indicated as longitudinally extending spacer strips **15** of suitable thickness which are fastened, such as by adhesive, to the periphery of the body **10** at angularly spaced positions. These strips are preferably of cork but may be of other yieldable material which will frictionally engage the inner surface of the instrument bell when the mute is inserted therein.

According to this invention it is important to provide acoustical sound-absorbing pads or strips **16** in association with the spacer strips **15.** Each pad is preferably made of felt although other soft sound-absorbing materials may be used. The pads **16** are disposed angularly in cooperation with the spaces **17** between the spacer strips **15** and preferably are disposed at least partially in said spaces but may extend longitudinally outwardly therefrom. One or more pads **16** may be disposed angularly between the strips **15.** The pads **16** are preferably fixed to the surface of the body **10** by suitable adhesive and, as will be explained later, are of substantially less thickness than the strips **15.**

In use, as indicated in FIG. **4,** the small end of the body **10** of the mute is inserted in the bell B of the trombone T. The body is pushed axially into the bell until the spacer strips **15** are in tight frictional engagement with the wall of the bell so as to retain the mute in the bell. This will produce the longitudinal wind passages **17***a* between the outer surface of the mute body **10** and the inner surface of bell B. It should be noted from FIG. **5** that the sound absorbing pads **16** are of substantially less thickness than the spacers **15** and do not contact with the wall of the bell. It will also be noted that they are angularly spaced from the strips **15** but may longitudinally overlap them extending inwardly between them.

It has been found that if the sound absorbing pads are located at the nodal points between the mute and the bell, the rescinding nodes back through the bell, which usually cause the "wolf tones", will be dampened out.

Having thus described the invention what is claimed is:

1. A mute for a brass musical instrument comprising:

a tapering, hollow, tubular body being closed at the large end and open at the small end;

spacer means fixed to the exterior of said body adjacent said small end for frictionally securing said body to the bell of said instrument when said mute is inserted therein, said spacer means forming a plurality of wind passages defined by said bell, said body, and said spacer means; and

sound absorbing means affixed to the exterior of said body adjacent one end of each of said wind passages.

2. A mute according to claim **1** wherein said sound absorbing means are located at the nodal points between the mute and the bell.

3. A mute according to claim **1** in which the spacing means comprises longitudinally extending spacer strips of substantial thickness, and said sound absorbing means comprises pads of sound absorbing material having less thickness than said spacer strips.

4. A mute according to claim **3** in which said pads are of felt and are of substantially less thickness than the spacer strips.

5. A mute according to claim **4** in which the pads of felt are located in said respective wind passages in angularly spaced relationship relative to said spacer strips and in longitudinally overlapping relationship thereto with portions within the passages and portions extending outwardly therefrom.

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