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United States Patent [19]

Shepherd

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[54] **WHISTLE**

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[51] **Int. Cl.**[6] **G01K 5/00**

[52] **U.S. Cl.** ..... **116/137 R**; 116/141

[58] **Field of Search** ..... 116/137 R, 141; 446/204

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[57] **ABSTRACT**

A whistle is provided which will create two frequencies when blown to produce a beat. The whistle has a mouthpiece defining an inlet opening and an inlet passageway extending axially from the inlet opening to a main body which has two similar chambers extending generally axially. Air from the passageway engages two splitter edges associated one with each of the chambers. A lanyard receiver extends axially from the main body remote from the mouthpiece and defines a transverse cavity connected to one of the axial chambers. The whistle is made from first and second parts having mating peripheral surfaces where a joint is made. The arrangement of the whistle is such that two resonant frequencies are created each having a different audible frequency to create a beat. This is achieved in a simple, light and compact structure which is simple to assemble resulting in a relatively inexpensive whistle having good sound characteristics.

4 Claims, 3 Drawing Sheets

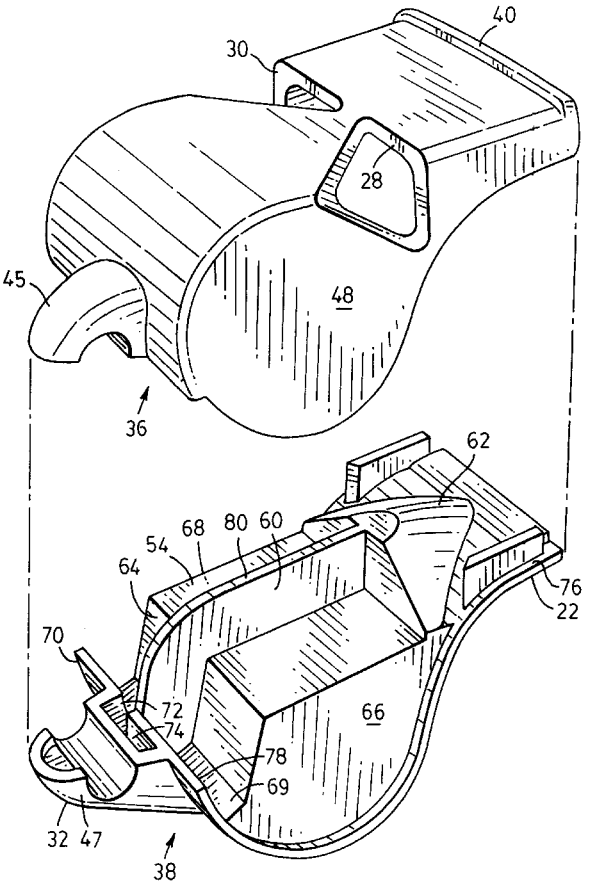

FIG. 1

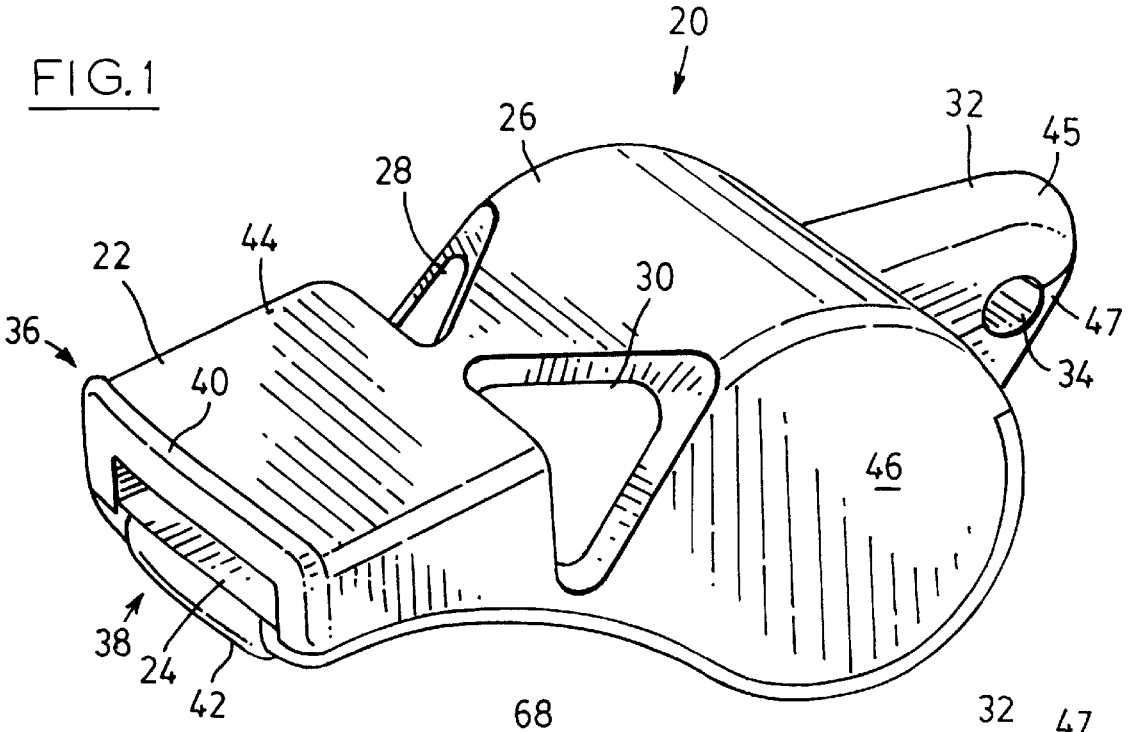
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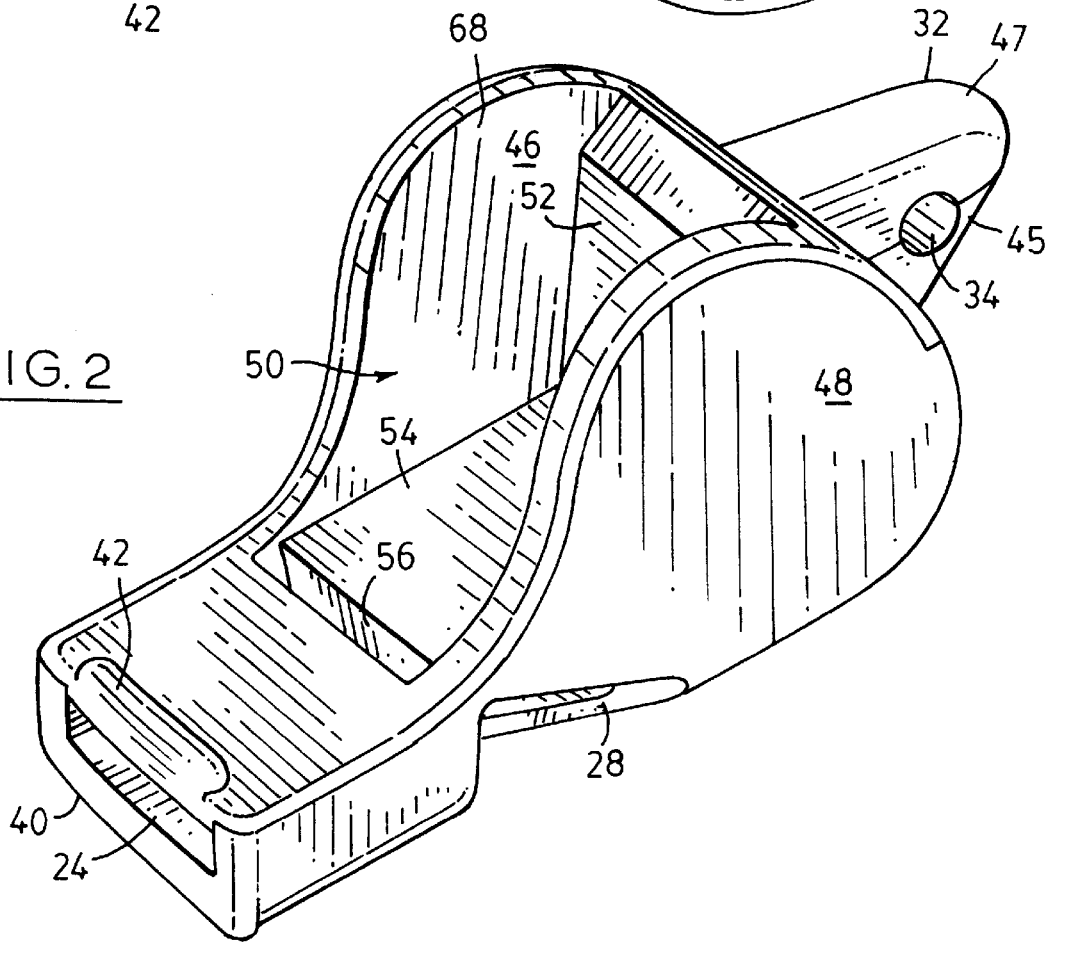
FIG. 2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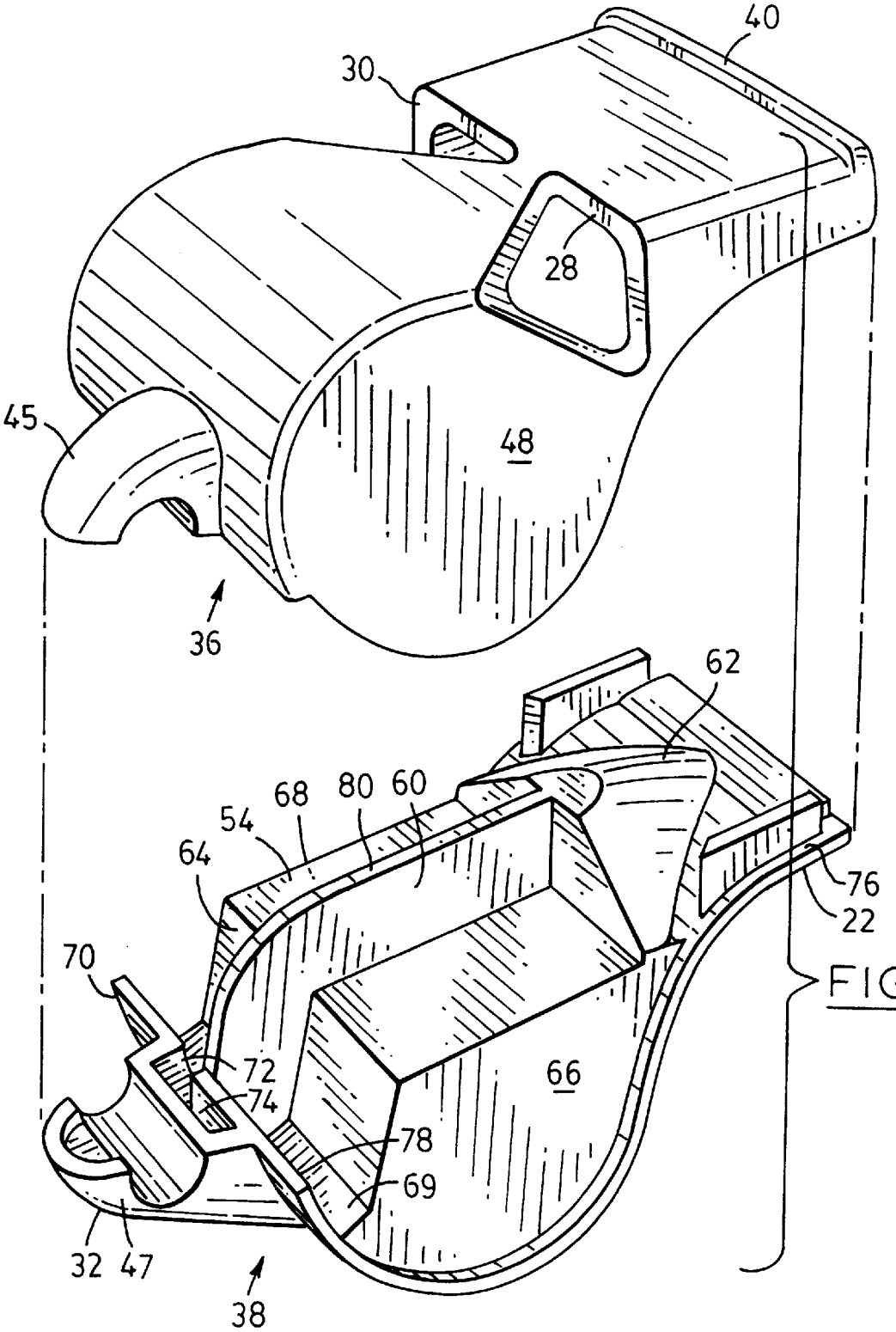

FIG. 3

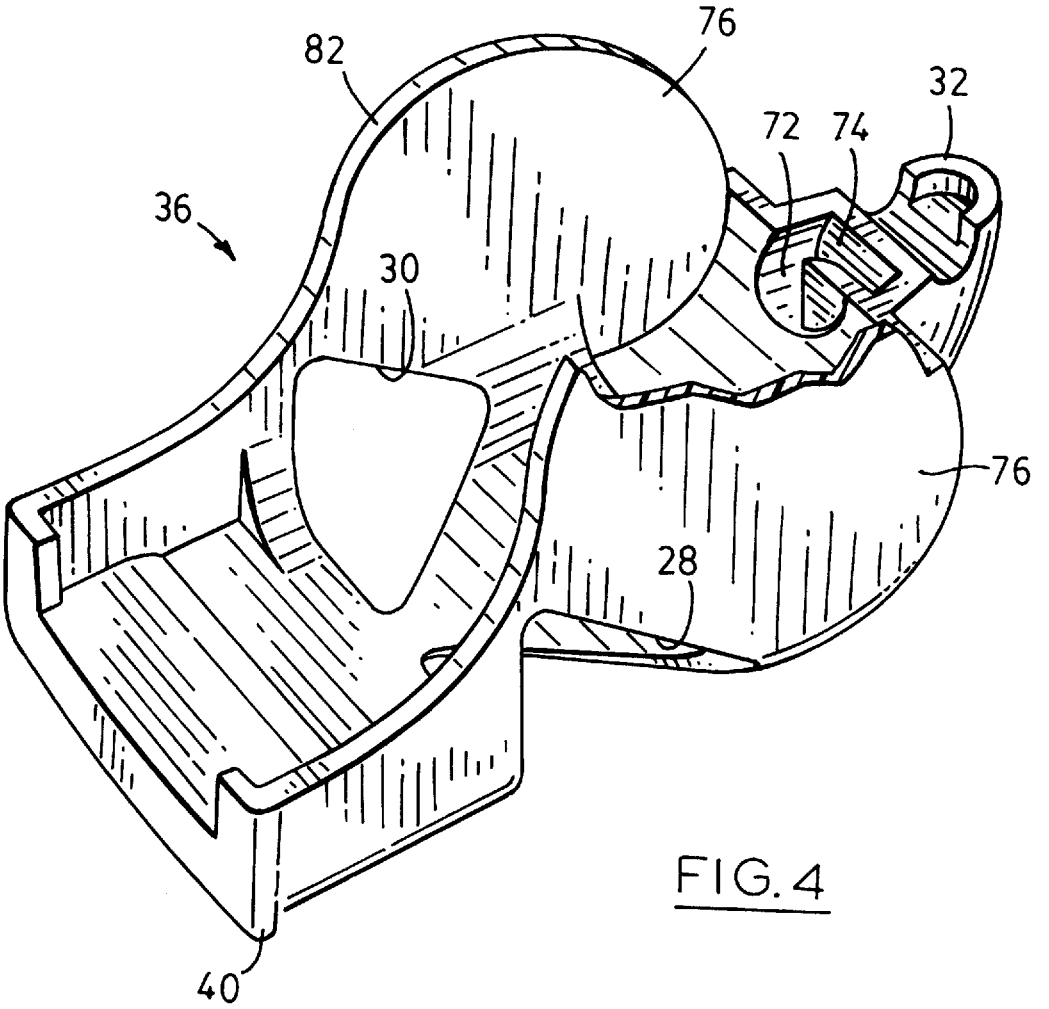

FIG. 4

WHISTLE

FIELD OF THE INVENTION

This invention relates to a whistle of the type commonly referred to as a "pea-less" whistle and which relies on beats resulting from resonant harmonics in adjacent chambers having unequal volumes. More particularly, the invention relates to a simple two chamber whistle having a mandolin shape.

BACKGROUND OF THE INVENTION

Whistles are used for many purposes ranging from use by referees to control sports events to emergency use to attract attention. The required characteristics of whistles depend on the intended use. For instance, a professional referee needs a whistle which responds reliably to produce a loud noise so that the referee can control a game regardless of crowd noise. A whistle which has been proven to be suitable for such use is described in U.S. patent Ser. No. 4,821,670.

In some circumstances a simpler whistle would suffice. Examples would include uses by teachers and by persons who carry a simple whistle to attract attention or to sound an alert. These simpler whistles should preferably be inexpensive and yet be relatively reliable and produce a loud noise when blown.

The present invention is directed to a simpler whistle which is relatively small and inexpensive. Such a whistle should be simple to make and assemble, and would preferably be of light weight plastics material using a minimum of material. The whistle should provide a loud noise when blown and preferably be of a style which ensures that the user has no difficulty in using the whistle.

It is therefore among the objects of the invention to provide a simple compact whistle for occasional use which is easy to manufacture and assemble and is both light weight and inexpensive.

SUMMARY OF THE INVENTION

A whistle is provided which will create two frequencies when blown to produce a beat. The whistle has a mouthpiece defining an inlet opening and an inlet passageway extending axially from the inlet opening to a main body which has two similar chambers extending generally axially. Air from the passageway engages two splitter edges associated one with each of the chambers.

A lanyard receiver extends axially from the main body remote from the mouthpiece and defines a transverse cavity connected to one of the axial chambers. The whistle is made from first and second parts having mating peripheral surfaces where a joint is made.

The arrangement of the whistle is such that two resonant frequencies are created each having a different audible frequency to create a beat. This is achieved in a simple, light and compact structure which is simple to assemble resulting in a relatively inexpensive whistle having good sound characteristics.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an isometric view from the mouthpiece end of a whistle according to a preferred embodiment of the invention;

FIG. **2** is a view similar to FIG. **1** with the whistle inverted;

FIG. **3** is a view similar to FIG. **1** from the outer end of the whistle and showing upper and lower parts of the whistle prior to assembly; and

FIG. **4** is an isometric view of the upper part of the whistle shown inverted and looking from the mouthpiece end.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference is first made to FIG. **1** which illustrates a whistle designated generally by the numeral **20** and including a mouthpiece **22** leading from an inlet opening **24** to a main body **26**. A pair of splitter edges **28, 30** are formed on the main body for creating resonance as will be explained. The main body and mouthpiece combine to form a so-called "mandolin shape" extending generally axially from the inlet opening **24**, and a lanyard receiver **32** projects axially from the main body **26** remote from the mouthpiece to define a transverse opening **34** for receiving a lanyard or key ring (not shown).

As will be described in more detail with reference to FIGS. **3** and **4**, the whistle **20** is made up of first (or upper) and second (or lower) parts **36, 38** indicated generally in FIG. **1**. Together these parts define the mouthpiece **22** and main body and lanyard receiver **32**.

An upper wall **44** extends along the mouthpiece formed by the first part **36** and curves around the main body terminating in an upper portion **45** of the lanyard receiver **32**. Side walls **46, 48** are made up from both parts **36, 38** as will be described and these side walls extend to form part of the mouthpiece as well as the main side wall of the main body. The lanyard receiver is completed by a lower portion **47** forming part of the lower part **38**.

It will be seen in FIG. **2** that the mandolin shape is the result primarily of the shapes of the side walls **46, 48**. These walls are spaced to either side of a recess **50** terminating at a transverse wall **52** adjacent the lanyard receiver **32** and extending downwardly from the underside of a platform **54**. A moulding recess **56** simply reduces the material (and hence the weight) and has no structural significance.

It will also be seen in FIGS. **1** and **2** that the mouthpiece is associated with a lip **40** on the first part **36** and a downward protuberance **42** on the second part **38** to permit the user to retain the whistle in the mouth using lips and/or teeth.

As seen in FIG. **3**, the second or lower part **38** defines the platform **54** which is divided by a central upright wall **60** extending axially from an air deflector **62** positioned centrally in the mouthpiece **22** so that air entering the inlet **24** (FIG. **1**) will be split equally. The platform **54** ends at the transverse wall **64** and the dividing wall **60** continues downwardly maintaining the separation to either side.

The second part **38** also defines inner side walls **66** and **68**, the latter of which is seen in FIG. **2**. The transverse wall **64** meets the inner side walls **66** and an angled and generally axial bottom wall **69** combines with a curved outer end wall **70** to meet the dividing wall **60** thereby forming a recess which will partially define chambers in the whistle. It will be evident that when the first part **36** is engaged with the second part **38**, closed chambers are created. This will become more apparent after describing FIG. **4**. For the moment it is sufficient to indicate that there are two similar chambers divided by the upright wall **60** with one of the chambers having communication through a gap **72** to a transverse cavity **74** formed in the lanyard receiver **32**.

The structure of the lanyard receiver **32** shown in FIG. **4** is complemented by a mirror-image shaping on the underside of the first part **36** and this can be seen in FIG. **4**. Here it will be evident that the transverse cavity **74** communicates through gap **72** and that on assembly, outer side walls **76**, slide into close contact with the inner side walls **66**.

The assembly of the parts **36** and **38** is preferably effected by ultrasonic welding. This necessitates the parts to have complementary surfaces where the welding is to take place. Returning to FIG. **3**, the part **38** has a peripheral upward facing surface starting at **76** near the mouthpiece inlet opening and passing along the mouthpiece, around the main portion, and along an upward facing surface **78** before returning along the hidden side of the part **38** in a similar fashion to the exposed side. Also, the wall **60** has an upward facing surface **80**.

The peripheral surface **76** mates with a corresponding peripheral surface **82** (FIG. **4**) on upper part **36**, and the surface **78** meets an inner surface of the part **36**. As a result ultrasonic welding can be used to weld the parts together while applying a vertical load (as drawn in FIG. **1**) to maintain pressure between the surfaces as welding takes place. To better control such welding, one of the mating surfaces will be provided with a small raised bead to concentrate melting and ensure a continuous weld.

The result is a whistle made up of two parts to provide two similar chambers associated with respective splitter edges **28**, **30**. Each chamber extends axially and terminates in a downward portion between the transverse wall **64** (FIG. **3**) and the end wall **70**. One of the chambers is in communication with the transverse cavity **74** resulting in an increase in the volume of air available to resonate. As a result the natural frequencies of resonance at the splitter edges **28**, **30** are different to cause a beat having an audible relatively high pitched frequency normally associated with a whistle.

The structure of the whistle is such that the requisite frequencies can be achieved in a relatively small structure because the desirable mandolin shape accommodates similar chambers by having the chambers extend axially from the splitter edges and then downwardly with one chamber communicating with the transverse cavity in the lanyard receiver. This arrangement results in a light compact whistle which preferably has a conventional mandolin shape.

It will be evident that the invention can be embodied in a variety of structures and all such structures are within the scope of the invention as claimed.

It is claimed:

1. A whistle for creating two resonant frequencies resulting in a beat, the whistle having upper and lower parts of thermoplastic material, the parts including mating peripheral surfaces welded to one another, and the upper and lower parts combining to define a mouthpiece having an inlet opening and an inlet passageway extending axially from the inlet opening, a main body having two similar chambers and splitter edges associated one with each of the chambers, the chambers extending axially from the splitter edges and then downwardly, and a lanyard receiver extending axially from the main body remote from the mouthpiece and defining a transverse cavity connected to one of the chambers whereby air forced over the splitter edges causes two resonant frequencies which combine to create an audible beat.

2. A whistle as claimed in claim **1** in which the whistle is mandolin shaped.

3. A whistle as claimed in claim **1** in which the lower part defines an air deflector in the mouthpiece to direct incoming air equally towards the respective splitter edges.

4. A whistle as claimed in claim **3** in which the lower part includes an upright wall between the chambers.

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