



UNITED STATES PATENT

This PDF file contains a digital copy of a United States patent that relates to the Native American Flute. It is part of a collection of Native American Flute resources available at the web site <http://www.Flutopedia.com/>.

As part of the Flutopedia effort, extensive metadata information has been encoded into this file (see File/Properties for title, author, citation, right management, etc.). You can use text search on this document, based on the OCR facility in Adobe Acrobat 9 Pro. Also, all fonts have been embedded, so this file should display identically on various systems.

Based on our best efforts, we believe that providing this material from Flutopedia.com to users in the United States does not violate any legal rights. However, please do not assume that it is legal to use this material outside the United States or for any use other than for your own personal use for research and self-enrichment. Also, we cannot offer guidance as to whether any specific use of any particular material is allowed.

If you have any questions about this document or issues with its distribution, please visit <http://www.Flutopedia.com/>, which has information on how to contact us.

Contributing Source: United States Patent and Trademark Office - <http://www.uspto.gov/>

Digitizing Sponsor: Patent Fetcher - <http://www.PatentFetcher.com/>

Digitized by: Stroke of Color, Inc.

Document downloaded: December 5, 2009

Updated: May 31, 2010 by Clint Goss [clint@goss.com]



[54] FIPPLE FLUTE

[76] Inventor: Paul Conrad Johnson, P.O. Box 41, Austin, Tex. 78767

[22] Filed: Sept. 4, 1973

[21] Appl. No.: 394,363

[52] U.S. Cl. 84/380, 84/330

[51] Int. Cl. G10d 7/00

[58] Field of Search..... 84/330, 380, 380 C, 384

[56] References Cited

UNITED STATES PATENTS

2,331,975	10/1943	Hagopian.....	84/330
2,460,931	2/1949	Gretsch.....	84/380 C
2,485,749	10/1949	Ladd.....	84/380 C X
D20,998	8/1891	Litzelle.....	84/380 C X

Primary Examiner—Lawrence R. Franklin
Attorney, Agent, or Firm—Murray Robinson

[57] ABSTRACT

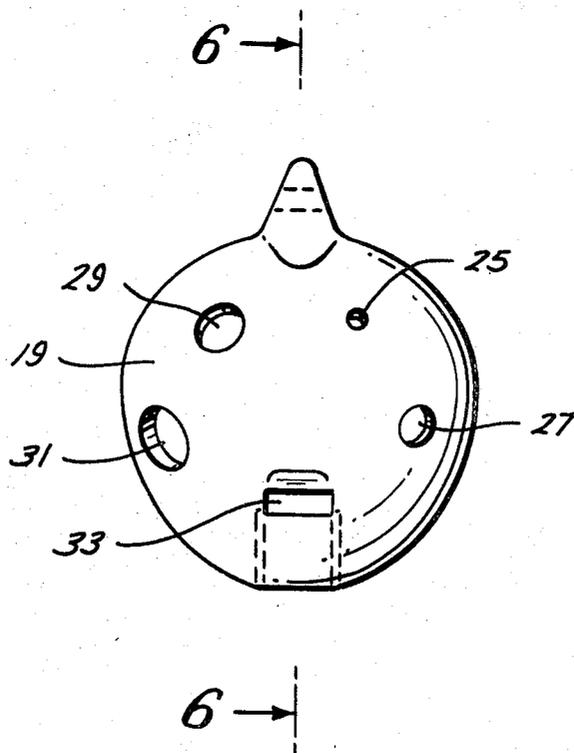
A fipple flute includes an oyster shaped hollow body providing a resonant chamber, a whistle type mouthpiece in the rim of the body chamber communicating

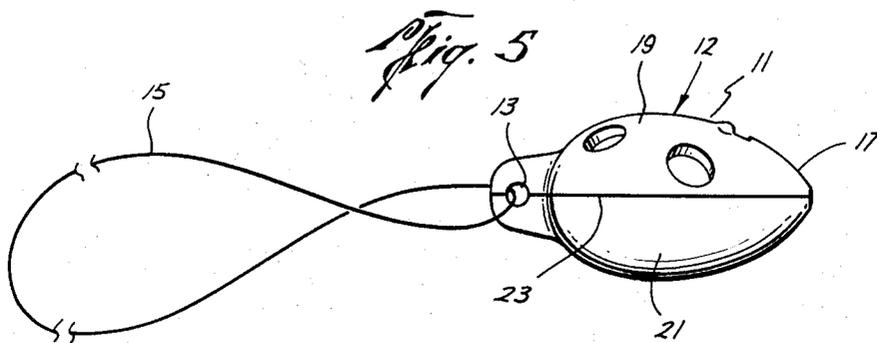
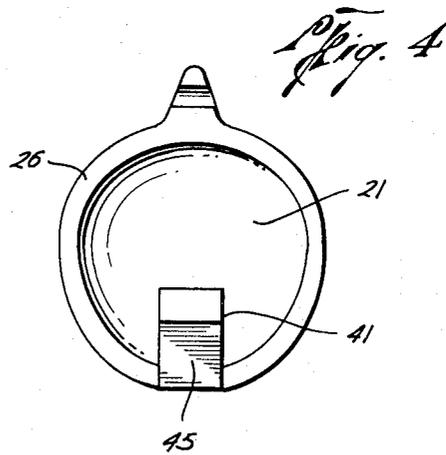
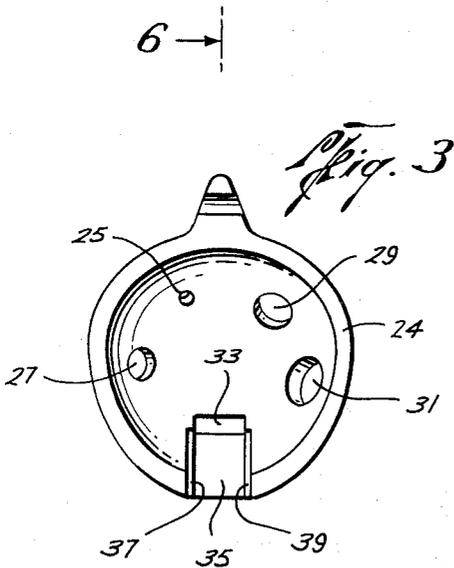
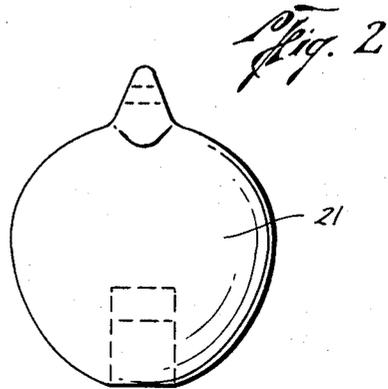
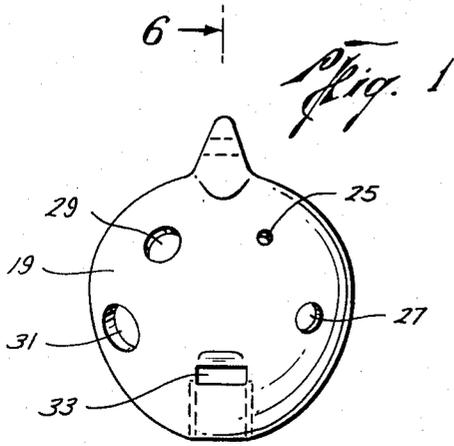
with the resonant chamber and with the exterior through a slit in the body, and four pitch control openings in the resonant chamber of differing sizes, disposed at each side of a diametral plane through the body intersecting the mouthpiece and perpendicular to the rim plane, the holes spaced so as to be simultaneously engageable by fore finger and middle finger of each hand of the musician, the pitch hole sizes and locations relative to the resonant chamber enabling a full octave western chromatic scale of thirteen notes to be sounded without overblowing, an eyelet at the rim opposite the mouthpiece being provided with a necklace for carrying the flute.

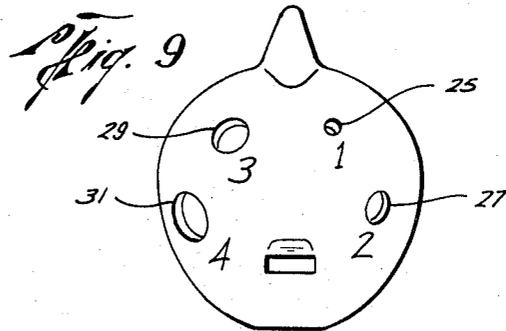
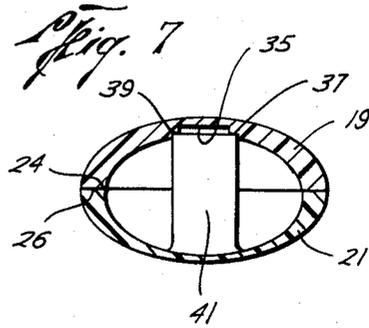
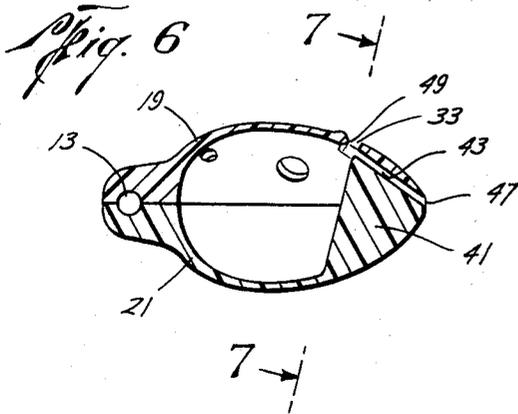
The four pitch control holes are disposed as at the corners of a trapezoid adapting same to a mnemonic musical notation consisting of a quartered square with shaded quarters corresponding to holes to be stopped.

The body is made in two halves initially separated along the rim and glued together; polyester resin being the body material and the glue of the same material. After joining the halves, the glue flash is trimmed and the instrument tuned by pitch hole reaming or filling. Decorative exterior finishes are applied.

6 Claims, 13 Drawing Figures







LET THIS
SQUARE REPRESENT
THE FOUR HOLES -
COVER THE
SHADED ONES

Fig. 11

TONIC SCALE

IT IS EASIEST TO LEARN THE SCALES FROM RIGHT TO LEFT

DO	RA	ME	FA	SO	LA	TE	DO

Fig. 12

CHROMATIC SCALE

1	2	3	4	5	6	7	8	9	10	11	12	13	

HALF COVER THE HOLE WHEN THE SQUARE IS HALF-SHADED

Fig. 13

IM	A	LIT-	TLE	TEA	POT	SHORT	AND	STOUT.	HERE	IS
MY	HANDLE	HERE	IS	MY	SPOUT.	WHEN	I	GET	ALL	STEAMED
UP	THEN	I	SHOUT.	TIP	ME	OVER	AND	POUR	ME	OUT.

FIPPLE FLUTE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention pertains to musical instruments and their manufacture and more particularly to a fipple flute.

2. Description of the Prior Art

In the Encyclopedia Britannica, copyright 1953, Volume 19, page 18, there is the entry under FLUTE from which it appears that flutes are resonant tubes with the air column length varied by openings along the length, the air being set in vibration by blowing against a sharp edge adjacent the tubes, such edge being either the open end of the tube or a whistle mouthpiece connected to the tube (fipple flute) or a hole in the side of the tube shaped as a mouthpiece (transverse flute). It is said that the tone quality depends somewhat on the material, silver, gold, cocus-wood, and ebonite being mentioned. It is further indicated that "the proportions, position and form of the stopper, and of the air chamber situated between it and the embouchere are mainly influential in giving the flute its peculiar slightly hollow timbre, due to the paucity of the upper partials of which, according to Helmholtz, only the octave and twelfth are heard."

The same work states that the compass of a modern transverse flute is three octaves with chromatic semitones from middle C upwards, the pitch being proportional to the length of the stationary air column; which is "practically somewhat longer than the length of the tube," the length of the column being varied by opening the lateral finger holes between the embouchere at the one end and the stopper at the other end. The early flute is said to have had six finger holes.

The foregoing encyclopedia also has the entry:

"RECORDER, Fipple Flute or English Flute, a medieval flute, blown by means of a whistle mouthpiece and held vertically in front of the performer like a clarinet. It consisted of a wooden tube, which was at first cylindrical or nearly so, but became, as the instrument developed and improved, an inverted cone.

"Being very easy to play, the recorder enjoyed great popularity in all countries of the middle of the 18th century until the greater possibilities of the transverse flute turned the tide against it. After 1800 a small variety, called the flageolet, played a certain role as an amateur instrument in England (where even double and triple flageolets were built). In the 20th century an increased interest in ancient music brought forth a renaissance of the recorder in various sizes."

A further entry in the above mentioned encyclopedia is as follows:

"FLAGEOLET, in music, a kind of flute-a- bec with a new fingering invented in France at the end of the 16th century and in vogue in England from the end of the 17th to the beginning of the 19th century.

"The flageolet differed from the recorder in that it had four finger holes in front and two thumb holes at the back. This fingering has survived in the French flageolet still used in the provinces of France in small orchestras and for dance music."

The encyclopedia also contains an entry as follows:

"OCARINA, a wind instrument invented in Italy, which is classed with musical toys or freaks. It consists of a vessel in the shape of an egg with a pointed base and perforated with holes and a tube like a spout in the side containing the mouthpiece. In America, it is sometimes called a 'sweet potato.'"

One form of ocarina illustrated in Webster's Seventh New Collegiate dictionary on page 583 appears to have eight finger holes.

According to the World Book Encyclopedia, copyright 1961, Volume 6, page 271, a flute usually has 13 tone holes and several other holes for finger movements although earlier flutes of the 17th and 18th centuries had fewer finger holes. The same word on page 108 states that a Flageolet is a small woodwind type instrument including a whistle mouthpiece and a tube with four finger holes on top and two underneath or with all six holes on top. In volume 19 at page 237 it is indicated that a whistle consists of a tube with a sharp edge called a lip. It is said that "The air or steam is blown into one end of the tube and swirls into a vortex, or whirlpool-like motion, where it strikes the lip. This action alternately compresses and expands the air or steam so that it makes a sound. The shorter the tube, the higher the pitch of the sound produced." In volume 13 of the same work, at page 487, the Ocarina is described as a toy wind instrument of the whistle type including a mouthpiece through which air is blown and seven to 10 holes that sound a simple scale.

It appears that the Ocarina, though employing a whistle mouthpiece like a fipple flute, is similar to the transverse flute in that the length of the resonating chamber and the direction of the line of tone control holes is transverse to the axis of the mouthpiece.

An entry in the Encyclopedia Britannica, 11th Edition, copyright 1911, Volume 28, pages 595-596, states that the whistle "takes many forms, from the straight flute and flageolet type made of wood or metal and pierced with holes, to the metal signalling pipe used for signalling on board ship and by policemen." A further example of a type of whistle referred to in this work at page 634 of Volume 21 is the Pipe and Tabour, the tabour being a small drum and the pipe a three hole flageolet, two holes in front and one in back. Volume 22 of the same work, page 966, notes that the Recorder, a medieval flute blown by means of a whistle mouthpiece survives today primarily only in the obsolete flageolet and in the penny whistle. In Volume 18, under Mouthpiece, pages 946, 947, the same encyclopedia classifies types of mouthpieces as pan-pipe, whistle, reed, and cup. It appears that the pan-pipe type includes the ancient oblique flute and the modern transverse flute in which the air stream from the musician's lips blows across an edge, partially into the instrument's resonating chamber or tube and partially away from it. The whistle is similar to the pan-pipe except that the user blows into a converging tube which produces a jet or stream of air precisely directed on an edge or lip cut into the side of the resonant pipe. It is stated on page 946 that "The principle of the whistle mouthpiece has been applied with slight modifications to a variety of instruments such as the recorder family in England (Fr. flute-a-bec, flute douce, flute anglaise.; Ger. Schnobelflote; Plockflote, Ital. floto dolce), in which

the channel assumes the form of a beak, the flageolet, the penny whistle, etc. All these whistles or fipple pipes have at all times enjoyed great popularity owing to the ease with which they can be played. [See Rev. F. W. Golpin, 'The Whistles and Reed Instruments of the American Indians of the North-West Coast.' Proc. of Musical Assoc. (1903-1904), page 115, with illustrations.]"

Macgowan and Hester, Jr., in *Early Man in the New World*, copyright 1962, by the American Museum of Natural History, refer in an illustration on page 236 to both New World and Old World Panpipes, being a group of 16 apertured pipes of various lengths lashed together so that one or another can be selectively blown in succession, and on page 255 is reference to the new world whistling jar.

The fipple flute or whistle and other instruments excited by blowing at an edge, such as the pan pipes and transverse flute, are distinguished from bugles, trumpets, and other instruments excited by vibration of the performer's lips placed against a cup type mouthpiece and also are distinguished from reed instruments in which a closed or free single reed or a double reed is caused to vibrate by blowing air and the reed in turn excites the resonant pipe or chamber portion of the instrument. These blowing type or wind instruments are to be distinguished from simple resonators. A kazoo is thought to be of the latter type.

Webster's dictionary, above referred to, defines a "kazoo" as "a toy musical instrument consisting of a tube with a membrane sealing one end and a side hole into which one sings or hums." It may be that the membrane has so many resonant frequencies that it can vibrate in step with whatever pitch the user hums into the end.

Oyster shaped wind instruments with what appear to be rim mouthpieces are shown in U.S. Pat. Nos. Des. 130,350 — Gillie; Des. 134,066 — Hommer; Des. 134,710 — Gillie.

but the mouthpieces appear to be not of the whistle type. Similarly, U.S. Pat. No. Des. 142,799 — Thompson, discloses an oyster shaped kazoo with, apparently, six holes in the body and a rim mouthpiece, but again there is no whistle.

Other humming excited musical instruments of oyster shape are shown in U.S. Pat. Nos. 2,331,975 — Hagopion; 2,513,600 — Thompson. In both of these disclosures the oyster shaped body is divided into two halves along a plane through the rim, the two halves being cemented together. Hagopion notes that: three (or one) apertures in his pipe shaped mouthpiece may be covered and uncovered with the fingers in much the same manner as when playing a piccolo or flute. He provides an eyelet at the body rim adjacent the mouthpiece to which a necklace is attached. Thompson notes that the body of his instrument may be made of plastic. He provides a tortuous flow passage from his rim mouthpiece to two egress holes in the body; the stopping of these holes with the fingers varies the air pressure in the body and hence the tautness of the kazoo element or diaphragm. Five or six vent holes are also provided adjacent the diaphragm.

Ocarinas made in two parts divided in a longitudinal medial plane through the tubular mouthpiece are shown in U.S. Pat. Nos. 1,788,613 — Bernard; 2,195,992 — Mausolf. The Bernard ocarina is made of

sheet metal. Mausolf's ocarina is made of molded plastic. Both of these ocarinas employ tubular mouthpieces extending laterally from the resonance chamber. In the Bernard construction the entire mouthpiece is a thin flat configuration. In the Mausolf instruction the mouthpiece is of circular cross section and a thin flat internal air passage is provided by a rib in the upper half of the mouthpiece fitting into but not filling a groove in the lower part, the passage thus formed leading to an outlet opening in the lower part.

U.S. Pat. No. 2,617,324 — Brody, discloses a whistle having four pitch control holes along the length of the resonant tube connected coaxially to the mouthpiece. It is not indicated what tones may be achieved with this whistle.

A modified ocarina is shown in U.S. Pat. No. 2,485,749 — Ladd, in which a single pitch control slot, with or without an auxiliary pitch control port, is used to play a continuous scale. It is also disclosed that two or three such devices can be combined in a single instrument, each of the two or three whistle mouthpieces communicating with a separate slotted resonance chamber. The musician may use both hands to control the separate slots. In the case of the two whistle modifications there would be four vent openings (two slots and two ports), and the musician could control the left hand slot and port with his left hand and the right hand slot and port with his right hand, blowing into both whistle mouthpieces simultaneously or successively it would appear.

U.S. Pat. No. 1,390,933 — Simpson, discloses a musical tabulature for fifes showing graphically which holes are to be stopped to produce sounds of the desired pitch. The fife under consideration has six pitch control holes, and the tabulature shows six aligned circles, the shaded circles corresponding to the holes to be stopped to produce a particular note.

SUMMARY OF THE INVENTION

A fipple flute includes an oyster shaped hollow body providing a resonant chamber, a whistle type mouthpiece in the rim of the body chamber communicating with the resonant chamber and with the exterior through a slit in the body, and four pitch control openings in the resonant chamber of differing sizes disposed two at each side of a diametral plan through the body intersecting the mouthpiece and perpendicular to the rim plane, the holes spaced so as to be simultaneously engageable by fore finger and middle finger of each hand of the musician, the pitch hole sizes and locations relative to the resonant chamber enabling a full octave western chromatic scale of thirteen notes to be sounded without overblowing, an eyelet at the rim opposite the mouthpiece being provided with a necklace for carrying the flute.

The four pitch control holes are disposed as at the corners of a trapezoid adapting same to a mnemonic musical notation consisting of a quartered square with shaded quarters corresponding to holes to be stopped.

The body is made in two halves initially separated along the rim and glued together; polyester resin being the body material and the glue of the same material. After joining the halves, the glue flash is trimmed and the instrument tuned by pitch hole reaming or filling. Decorative exterior finishes are applied.

BRIEF DESCRIPTION OF THE DRAWING

For a detailed description of a preferred embodiment of the invention reference will now be made to the accompanying drawings wherein.

FIG. 1 is a top view of a flute embodying the invention.

FIG. 2 is a bottom view thereof,

FIG. 3 is a bottom view of the upper half of the flute,

FIG. 4 is a top view of the lower half of the flute,

FIG. 5 is a side of the flute with necklace attached,

FIG. 6 is a section along plane 6—6 of FIG. 1,

FIG. 7 is a section taken at plane 7—7 of FIG. 6,

FIG. 8 is a pictorial view showing the manner of use of the flute,

FIGS. 9 and 10 show respectively a top view of the flute with the pitch control holes numbered and a diagram of a quartered square musical notation with the corresponding quarters like numbered,

FIGS. 11 and 12 write the lines and chromatic scales respectively using the quartered square notation, and

FIG. 13 is an example of a musical composition to be played on the subject flute written out according to the quartered square notation.

DESCRIPTION OF PREFERRED EMBODIMENT

Referring to FIG. 5, there is shown a flute 11 embodying the invention. The flute includes a hollow oyster shaped body 12 including an eyelet 13 at its rim to which is attached a necklace 15 by means of which the flute may be carried suspended from the musician's neck when not in use. At the rim of the body diametrically opposite to the eyelet 13 is the whistle mouthpiece 17.

The body 12 is formed of two halves 19,21 joined together, the parting line being at the rim 23. The rim is thicker than the rest of the body to provide inturred flanges or flat lips 24,26 to facilitate gluing the two halves together. Preferably the body is made of polyester resin and cemented together with polyester glue, the glue integrally welding the two halves together.

As best shown in FIG. 1, the upper half 19 is provided with four circular pitch control holes 25, 27, 29, 31 of progressively increasing diameter and area. There is also a rectangular whistle vent slot 33. As shown in FIG. 3, a groove 35 leads to the slot 33. The edges of the groove are rabbeted at 37,39. Referring to FIG. 4, a wedge shaped rib molded integral with the bottom half 21 of the flute body is adapted to be received between the rabbets 37, 39, leaving a passage 42, (FIGS. 6 & 7) between the top of groove 35 and the bottom 45 of rib 41. The outer end 47 of the passage 43 provides the air inlet opening of the whistle mouthpiece 17. The inner end of the passage emits air blown into the passage, the air being directed to pass over slot 33 whereby the air stream will strike the sharp edge 49 to excite vibrations of the air inside the hollow body 72.

Referring now to FIG. 8, there is shown the method of holding the flute 11 when it is being played, the two hands of the musician grasping the flute at opposite sides and holding it to the mouth, the rectangular slot 32 being left uncovered by the lips. One blows gently into opening 47. The index and middle fingers on each hand are used to cover fully or partially one or more of

the four pitch control holes 25, 27, 29, 31 in the top of the flute.

FIG. 9 is a top view of the flute showing the four holes, same being here numbered 1, 2, 3, 4. FIG. 10 is the outline of a quartered square mnemonic musical notation in which the four quarters are numbered 1, 2, 3, 4 indicating which quarters are to be correlated by the musician with the correspondingly numbered pitch control holes shown in FIG. 9. According to the method of notation, the musician is to stop with his fingers those holes corresponding to fully shaded quarters of the square, and partially stop those holes corresponding to half shaded quarters of the square, leaving unstopped the holes corresponding to the unshaded quarters of the square. Using this notation, FIG. 11 shows how to play an eight note tonic scale and FIG. 12 shows how to play a thirteen note chromatic scale. For example, assuming the flute is tuned to the key of C, the note D sharp is sounded by stopping fully all but hole 27, the latter being half stopped. This is shown at note 4 in FIG. 12. FIG. 13 shows how a musical composition can be written using the quartered square notation, repetition of a note as written below the word "handle" being indicated by repetition of the same quartered square notation. It is apparent that one advantage of the four hole flute construction is its conformability to the quartered square method of musical notation.

A method of manufacture of the flute and other data relevant to the flute is best set forth by the following quotation from an instruction sheet for the flute:

"Your flute is similar in design to pre-columbian whistles. It was designed and made by hand. The most difficult part of the design was the making of a wax flute that would (1) make a sound (2) play a full scale & (3) come apart in two halves. It was a trial and error process. Two silver halves were made from the wax halves, using the lost-wax-casting method. From the silver halves came silicone rubber molds, and finally from those molds came two finished polyester resin halves. Then the halves were put together, glued with the same material (polyester resin). They are then wrapped, trimmed and tuned for the last time. It takes roughly 3 days to make a flute.

There are several different kinds of finishes obtainable to decorate a flute.

warning! At no time touch the upper portion of the rectangular hole with sandpaper, a knife or any other instrument. It is precisely made and delicately positioned in your flute & allows sound to be produced.

DO NOT ALTER THIS AREA!

Now with this warning in mind . . . the seam may be removed by sanding it out . . . and you may choose from the following surface lustres:

1. Dull rough surface — Sand nearly the entire surface with No. 220 Carborundum Sandpaper. This finish looks more like stone than resin.
2. Dull smooth surface — Follow the same procedure as above, except use No. 400 Carborundum 'Fast Cut' water proof sandpaper. The sanding will go more quickly if you keep the surface wet.
3. Shiny Jewel-Like Lustre — Remove the seam with No. 400 sandpaper, then buff down the flute on a buffing wheel using resin buffing blocks (from

hobby shops) or simply rub down the flute with toothpaste and your bare fingers.

Your little flute is quite sturdy. If it is left in a pocket it will not melt in a hot washer or dryer. It can be broken. For instance, should you step on it, it will shatter. But you can repair it by gluing the pieces together with epoxy or any plastic glue. Since there are no moving parts, it should again operate perfectly.

From year to year it will be necessary to 'service' your flute to restore its full range of capabilities. Here's why: The wind tunnel is between the SLIT where one blows and the part of the rectangle described in the warning above. This tunnel is made to shape the wind properly to make sound. If excessive moisture or any object blocks this tunnel, your flute will not play.

1. Blow as hard as possible into the flute. (This will clear moisture and lint). This works 99 percent of the time. If not
2. Put some liquid detergent in the flute and hold it under a shower head or faucet. This will remove oil build-up and pocket lint.

If either (1) or (2) work DON'T try (3). It is a drastic and dangerous measure.

3. If you can still see an obstruction in the tunnel, insert a tiny object (a straight pin is too large). If it starts to bind, STOP! If the object has a sharp edge or point, it may cause rather than rid your flute or troubles. The blunt end of a scalpel blade is ideal, but difficult to find."

The drawings, FIGS. 1-7, are to scale, being 1½ times full scale. With this size body and pitch control holes of this size indicated and in the places indicated, the flute is tuned to play in the key of C using a western chromatic scale.

While a preferred embodiment of the invention has been shown and described, modifications thereof can be made by one skilled in the art without departing from the spirit of the invention.

I claim:

1. A flute comprising:
 - an oyster shaped body having an upper wall, a lower wall, and a rim defining the joining of said walls, said body enclosing a single hollow interior;
 - a vent slot offset from said rim in said upper wall;

a mouthpiece located on said rim;
 a passage in said body having an inlet opening in said mouthpiece and an outlet in said interior adjacent said vent slot, said passage shaped to direct air blown in through said inlet against an edge of said bent slot to excite vibrations of the air inside said hollow interior;

and only four pitch control holes of progressively increasing area located in said upper wall such that by partial and full stopping of said holes the flute will produce a chromatic scale.

2. Flute according to claim 1 in which said flute body is made of two portions joined together, one portion including said vent opening and a groove leading to said vent opening from the rim of the body, said groove having rabbeted edges, the other portion including a rib fitting between and bottoming against said rabbeted edges and forming said passage between said rib and said groove.

3. Flute according to claim 1 in which the four pitch control holes are disposed at the corners of a trapezoidal configuration.

4. Flute according to claim 1 in which the body is formed of two portions joined together with cement, the dividing line between the two portions being at the rim of the oyster shaped body, each portion being made of molded plastic and the cement being of the same material as said two portions of the body, and adapted to join said portions together the same as if integrally molded, each portion being provided with a flange at said rim providing an extended surface for receiving the cement, said flanges being inturred so as to be invisible from the exterior of the body whereby upon cementing the body portions together the appearance is that of an integrally molded one piece unit.

5. Flute according to claim 1 in which the four pitch control holes are disposed two at one side and two at another side of a diametral plane perpendicular to the rim and passing through the mouthpiece of the flute.

6. Flute according to claim 5 in which the two pitch control openings at each side of the aforesaid diametral plane have centers spaced apart the average distances between adjacent first and second fingers of the human hand.

* * * * *

50

55

60

65

PO-1050
(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,815,466

Dated June 11, 1974

Inventor(s) PAUL CONRAD JOHNSON

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Introduction, [76]: after "Box" delete "41" and insert --417--.

Column 8, line 6: delete "bent" and insert --vent--.

Signed and sealed this 1st day of October 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents