

Nov. 3, 1964

J. O. KUHN  
MUSICAL TOY

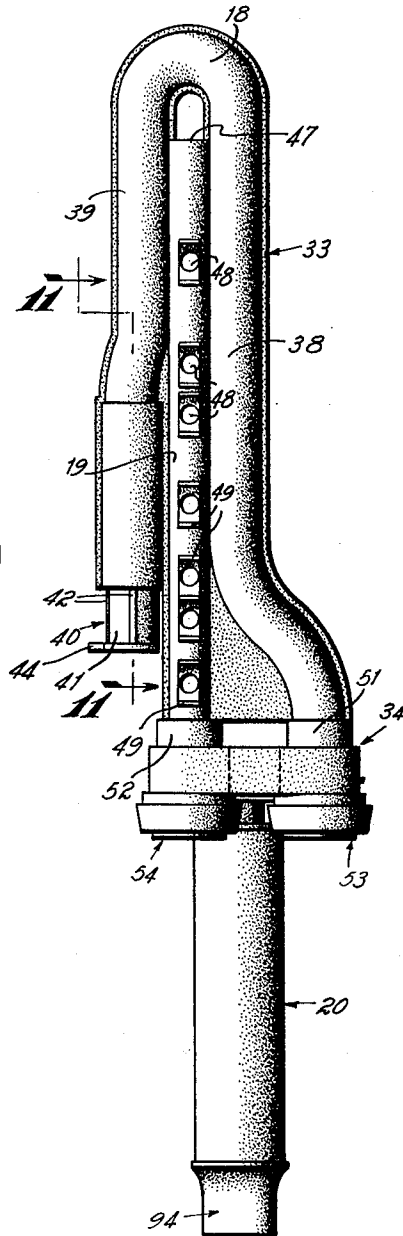
3,154,995

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*Fig. 1*



*Fig. 2*

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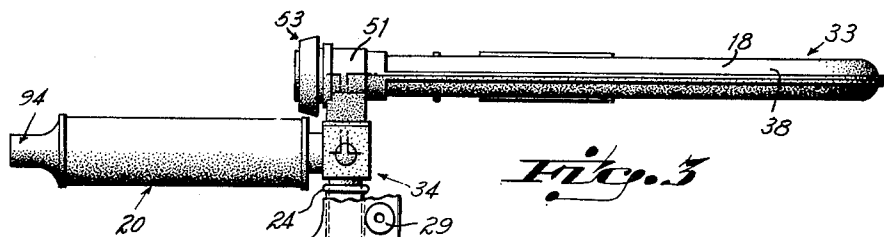
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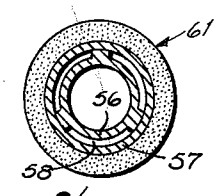
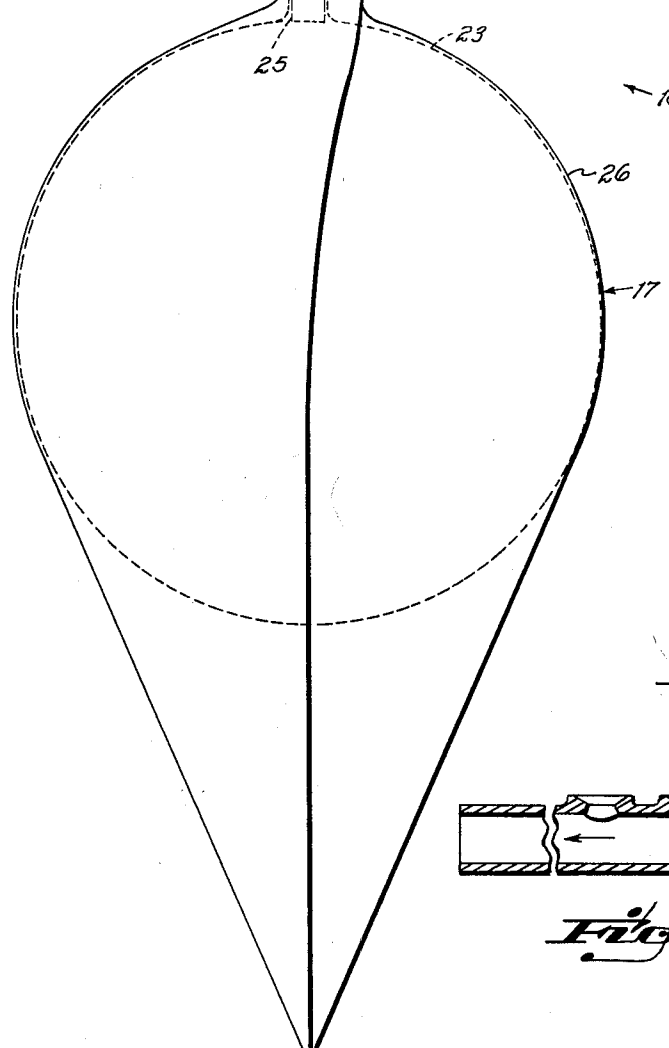
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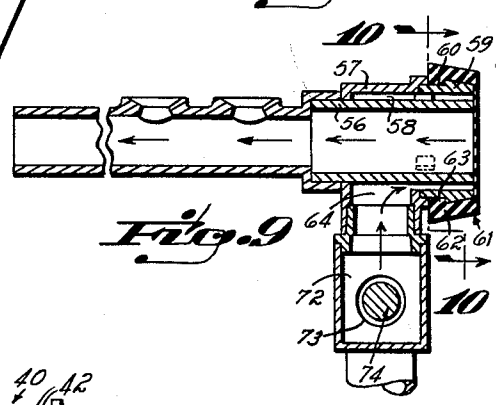
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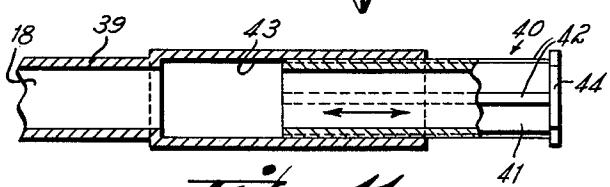
*Fig. 5*



*Fig. 10*



*Fig. 9*



*Fig. 11*

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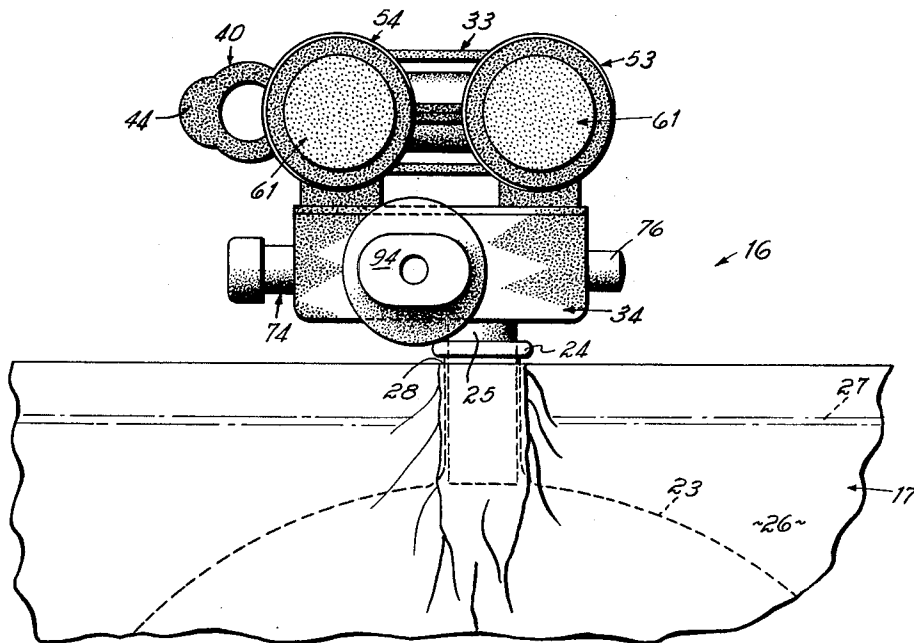
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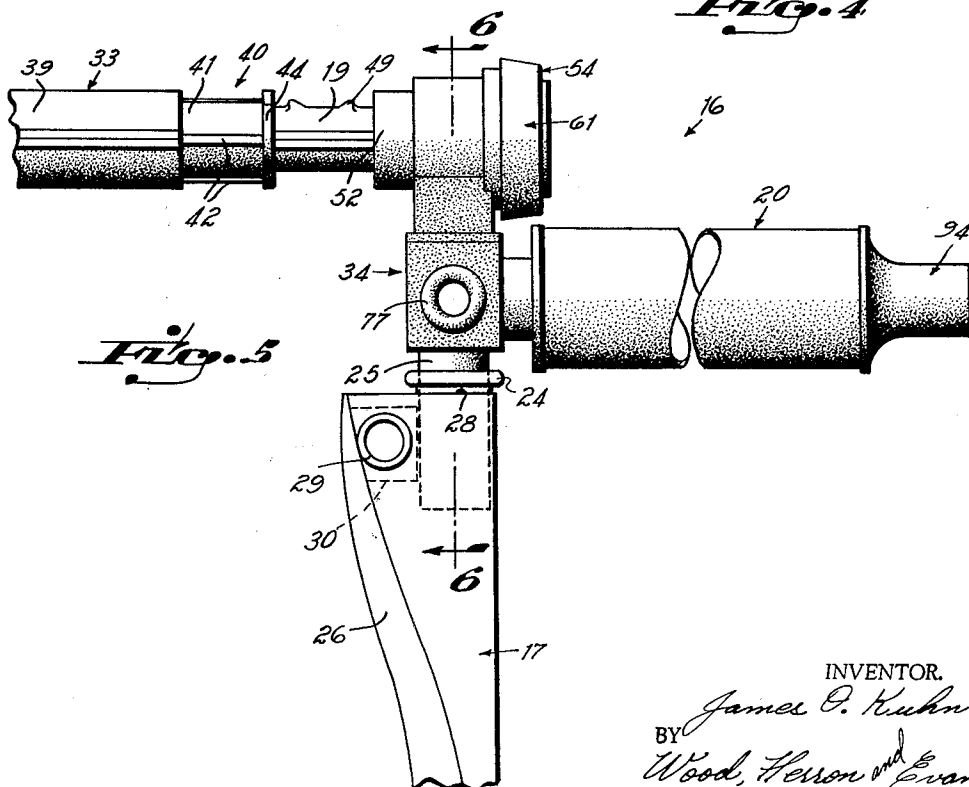
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*Fig. 4*



*Fig. 5*

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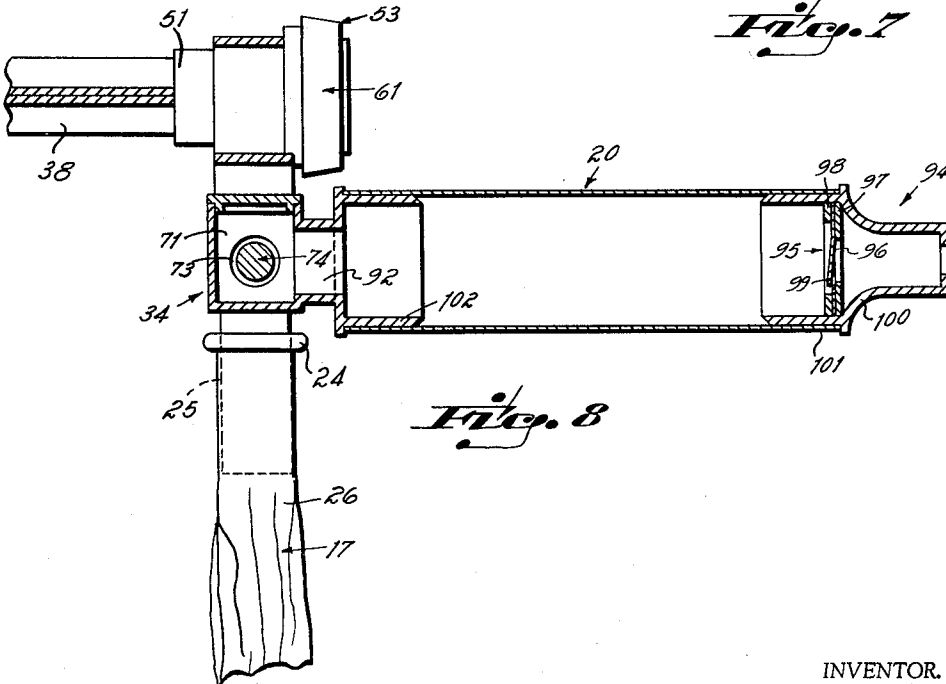
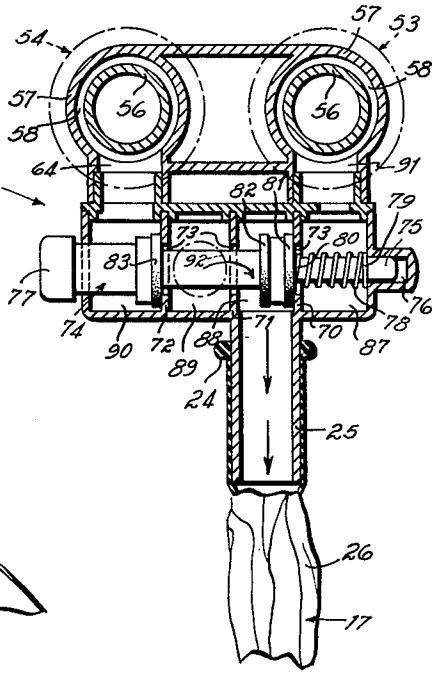
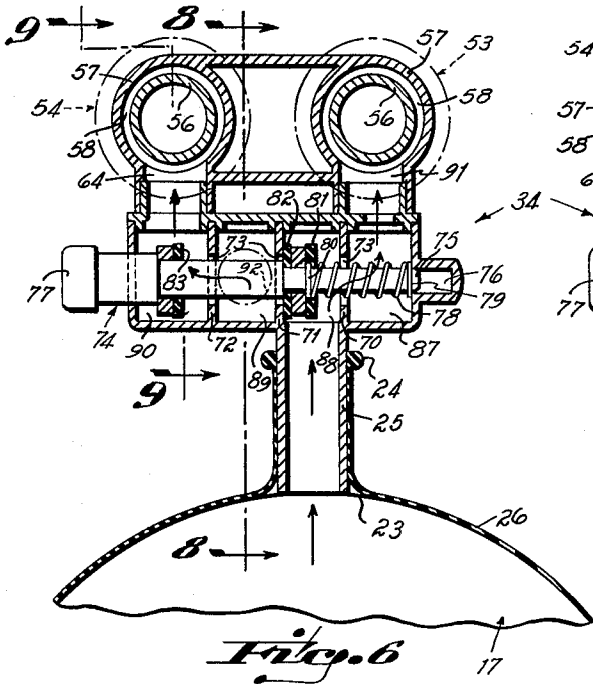
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3,154,995

MUSICAL TOY

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6 Claims. (Cl. 84-381)

This invention relates to a musical toy, and more particularly the invention is directed to a musical toy which simulates a Scottish bagpipe.

The Scottish bagpipe is a musical instrument having an inflatable bag and wind instruments projecting from the inflatable bag. Three or four of the instruments are called drones and play only a single musical tone. One of the instruments is called a chanter and is equipped with means for varying its tone in order to play a melody simultaneously and in harmony with the tones emanating from the drones. In one sense, the bagpipe is a difficult instrument to play because of the physical requirement of continually blowing sufficient air into the inflatable bag to supply the requirements of the drones and the chanter.

An objective of the present invention has been to provide a bagpipe for a child in which the energy required to play the drone and chanter simultaneously can be expended by the child in two distinct stages. Thus, the invention obviates the disadvantages of the known bagpipe and is adapted for a child to learn to play easily and within his physical limitations. The instrument of the present invention provides a chanter which may be played directly from the mouthpiece tube of the instrument, and a drone directly connectable to the inflatable bag. More specifically, the inflatable bag is constituted by a rubber balloon which is inflated from a mouthpiece through a valve which permits the balloon to be fully inflated independently of the operation of the drone and chanter. Once inflated, the valve can be shifted to change the connection of the inflatable bag from the mouthpiece to the drone whereby the air in the bag flows directly into the drone, the pressure of the air being maintained by the resiliency of the balloon. While the air from the balloon causes the drone to play, the child can play simple melodies by blowing directly into the chanter. Thus, the child can expend the energy required to play the instrument in a first stage during which air for the drone is stored in the balloon and a second subsequent stage in which air is blown into the chanter, while air from the balloon effects the playing of the drone.

It has been a further objective of the invention to provide a bagpipe simulating toy which can be manufactured inexpensively so as to permit its being sold for a reasonably low price. To this end, the chanter and drone have been laid out in such a way as to be manufacturable as a two-piece plastic molding which is subsequently joined together as by an adhesive or other bond. Further, the valve and resonator structure which is combined with the chanter and drone is also a simple structure and easily manufactured. Because of the use of inexpensive materials and elements to form the combination, neither chanter nor drone can be manufactured to produce a uniform tone. The invention therefore includes the provision of a variable extension on the drone tube through which its tone can be varied within limits to harmonize it with the chanter tone.

It has been another objective of the invention to provide a musical toy which, within the limits required by economy of manufacture, simulates as closely as possible the appearance of a Scottish bagpipe. The invention includes the use of an inflatable rubber balloon to drive the chanter as described above, the balloon being encased in a flexible plastic bag having a Scottish plaid print. The

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bag not only provides a decorative effect for simulating a bagpipe but performs two additional functions. First, it is attached to the instrument structure in such a manner as to assist in preventing the balloon from blowing off the fitting by which it is attached to the instrument; and, second, it protects the balloon from accidental engagement with foreign objects which might tend to rupture the balloon. Still further, the invention provides a decorative bag which is easily applied and removed so that without difficulty the somewhat fragile balloon can easily be replaced. The novel attaching means permits the balloon to be introduced into the bag and a portion of the bag wrapped around the balloon stem and snapped into snug engagement with the balloon and fitting.

It has been another objective of the invention to provide a bagpipe simulating toy in which the chanter can be played completely independently of the drone, thereby permitting the child to practice the simple melodies without having the distraction of the continuously operating drone interrupting his concentration.

These and other objectives of the invention will become more readily apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a perspective view showing the invention being played by a child,

FIG. 2 is a top plan view of the instrument,

FIG. 3 is a side elevational view of the instrument,

FIG. 4 is an end elevational view of the instrument,

FIG. 5 is a fragmentary side elevational view taken from the side opposite to that of FIG. 3,

FIGS. 6 and 7 are cross-sectional views taken along lines 6-6 of FIG. 5 and showing the valve in its two different positions,

FIG. 8 is a cross-sectional view taken along lines 8-8 of FIG. 6,

FIG. 9 is a cross-sectional view taken along lines 9-9 of FIG. 6,

FIG. 10 is a cross-sectional view taken along lines 10-10 of FIG. 9, and

FIG. 11 is a cross-sectional view of the drone tube extension taken along lines 11-11 of FIG. 2.

Referring to FIG. 1, a child, indicated at 15, is shown holding the musical toy 16. The instrument includes an inflatable bag 17 held under the child's arms and attached to the instrument proper which comprises a drone tube 18, a chanter tube 19, and a mouthpiece tube 20.

As shown in FIG. 3, the inflatable bag comprises a rubber balloon 23 which is frictionally secured at its open end 24 to a cylindrical fitting 25 on the instrument. The balloon is encased in a plastic bag 26, preferably having a decorative Scottish plaid, as shown in FIG. 1. The bag is heat-sealed along its upper edge, as at 27, except for a central opening 28 through which the balloon passes. A snap fastener 29 consisting of known male and female elements is secured to the upper edge of the bag, an element being on each side of the central opening 28 so that, when the balloon is inserted, the elements can be brought together to wrap one side of the bag around the balloon and fitting 25. Preferably, a re-enforcing fabric strip, shown in broken lines at 30, is adhesively secured to the top edge of the bag in order to provide a mounting strip for the fastener elements which will prevent the elements from tearing the somewhat fragile plastic bag.

The instrument itself may broadly be considered to be in three sections, namely, a musical tube section 33, a wind box and valve section 34 and the mouthpiece tube section 20. The musical tube section 33 comprises the drone tube 18 which is U-shaped to provide legs 38 and 39 between which is disposed the chanter tube 19. The layout of the

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combined chanter and drone tubes is such that the tube section assembly can be formed by two molded plastic parts which are bonded along their edges.

The end of the leg 39 of the drone tube is open and slidably receives a tuning extension 40. The extension is a cylindrical tube 41 having four circumferentially spaced ribs 42 which engage the internal surface 43 (FIG. 11) of the drone tube leg 39. The ribs reduce the amount of engaged surface between the leg and the extension, thereby permitting the extension to slide easily with respect to the leg. The extension has a tab 44 projecting radially from its end which can be gripped to facilitate the manipulation of the extension.

The chanter tube 19 is open at one end 47 and has a plurality of longitudinally spaced apertures 48 forming fingering holes by which the melodies are played on the chanter pipe. Each aperture is bracketed by bosses 49 to provide finger guides to facilitate the application of the fingers to the apertures during the playing of the instrument. The apertures are precisely spaced along the length of the tube so that the effective length of the tube can be varied by removing the fingers from one or more of the apertures to generate different tones on the musical scale.

The end 51 of the drone and the end 52 of the chanter are connected to respective resonators 53 and 54. The resonator structure is illustrated in detail in FIGS. 9 and 10. A central tube 56 is coaxial with the chanter tube 19 and forms a rearward extension of it. The central tube 56 is surrounded by a sleeve 57 of a sufficiently large inside diameter compared with the outside diameter of the central tube to create an annular chamber 58 between the sleeve and the central tube. An extension 59 of the sleeve forms an annular groove 60 by which a thin, vibratable diaphragm 61 is secured to the sleeve 57. The diaphragm has a skirt 62 terminating in an annular flange 63 which seats in the annular groove 60. The vibratable diaphragm and its skirt may be formed of soft rubber which is sufficiently elastic to permit the annular flange 63 to be slid into the proper position in the annular groove 60.

The lower portion of the sleeve 57 opens into a passage 64 connected to the wind box 34. Air under pressure, indicated by the arrows in FIG. 9, passes from the wind box through the passage 64 and into the annular chamber 58. The pressure of the air causes the diaphragm 61 to flex away from the end of the central tube 56 to permit the air to flow out through the chanter tube 19. In passing between the central tube 56 and the diaphragm 61, the diaphragm is caused to vibrate. The pitch or frequency of the musical tone created by that vibration will be dependent upon the effective length of the tube through which the air is expelled.

The wind box structure is best illustrated in FIGS. 6, 7 and 8. It comprises a generally rectangular chamber which is divided into four compartments by partitions 70, 71 and 72. Each partition has an aperture 73 providing a communication between adjoining compartments through which air may flow. That portion of each partition which surrounds the aperture forms a valve seat cooperating with valve washers, to be described below.

An axially slidable valve stem 74 is mounted in the wind box and has one end 75 projecting into a cup 76 formed at the end of the wind box. The other end 77 projects beyond the outside surface of the wind box and forms a button by which the valve may be manipulated. A compression spring 78 surrounds one end of the valve stem and has one end 79 bearing against the wind box and the other end 80 bearing against the valve stem. As viewed in FIG. 6, the compression spring urges the valve stem toward the left but permits the valve stem to be pushed toward the right by the application of pressure on the projecting pushbutton end 77.

The valve has three valve washers 81, 82 and 83 fixed to it. The valve washers cooperate respectively with the partitions 70, 71 and 72 to close or open the apertures 73 in them. When the valve stem is in the normal posi-

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tion, that is the left-most position to which it is urged by the compression spring, valve washer 82 closes the aperture in partition 71, the partitions in the apertures 70 and 72 being left open. This is the condition illustrated in FIG. 6. In FIG. 7, the valve has been pushed toward the right so that valve washers 81 and 83 close the apertures in partitions 70 and 72 respectively.

The four compartments of the wind box created by the partitions are designated as 87, 88, 89 and 90. Compartment 87 is connected to the drone tube resonator by a passage 91. Compartment 88 is connected to the inflatable bag by means of fitting 25. Compartment 89 is connected to the mouthpiece tube 20 by means of a passageway 92, best shown in FIG. 8, but shown in broken lines in FIGS. 6 and 7. Compartment 90 is connected to the chanter tube resonator through passageway 64, as described above.

When the valve is in its left-most position, the closing of the aperture in partition 71 and the opening of the aperture in partition 70 connects the inflatable bag to the drone tube resonator via compartments 88 and 87. Similarly, when the valve is in the left-most position, the mouthpiece tube 20 is connected through its compartment 89, the aperture in partition 72 in compartment 90 to the chanter tube. Thus, air from the inflatable bag will cause the drone tube to operate while, simultaneously, air from the mouthpiece tube 20 can cause the operation of the chanter tube.

When the valve is pushed in toward the right, the mouthpiece tube compartment 89 is closed off from the chanter tube by the engagement of valve washer 83 with partition 72 but is connected to the mouthpiece tube compartment 88 through the opening of the aperture in partition 71. In this condition, the child can blow into the mouthpiece, and the wind will pass directly from the mouthpiece through the compartments 89 and 88 into the inflatable bag.

To facilitate the blowing of air into the inflatable bag, the mouthpiece tube, best illustrated in FIG. 8, has at its end a mouthpiece 94 which is provided with a one-way flapper valve 95. That valve is formed by a flexible plastic member 96 clamped at its edges between washers 97 and 98. The member 96 has a valve element 99 hinged at one edge and adapted to seat against the washer 97. The mouthpiece 94 is removably mounted in an end 101 of the mouthpiece tube 20. The other end of the mouthpiece tube is frictionally held on a fitting 102 which is connected to the wind box by passage 92.

The flapper valve 95 permits a child to blow into the inflatable bag by way of the wind box, as described above, but prevents air from escaping from the inflatable bag back through the mouthpiece between breaths. The mouthpiece is removable from the mouthpiece tube 20 in order to permit the inflatable bag to be rapidly deflated at the conclusion of a playing of a number.

#### Operation

In the operation of the invention, a balloon 23 is attached to the fitting 25 and is clamped there by securing the snap fastener 29 of the plastic bag which encases the balloon. The bag is first inflated by holding the valve in the inner position, as illustrated in FIG. 7, and blowing into the mouthpiece 94. After the bag has been filled, the valve is released so that the compression spring can drive it to the leftward position, as shown in FIG. 6, and the air in the bag will pass through the drone tube by way of the resonator and cause the generation of a musical tone. Simultaneously, by blowing into the mouthpiece, the child will cause the chanter tube resonator to vibrate to effect the generation of a tone in the chanter tube. The pitch of that tone can be varied by changing the position of the fingers on the seven apertures 48 in the chanter tube. When the bag is first inflated, the drone tube can be tuned by adjusting its length by sliding the extension 40 in and out. While tuning the drone, a selected tone on the chanter can be played so that the tone

of the drone can be harmonically matched to the tone of the chanter.

After tuning, the instrument is played by varying the position of the fingers on the chanter tube in a known manner while the drone constantly plays a harmonic tone. After playing a selection, if the inflatable bag still has a considerable quantity of air in it, the air can be expelled without having to listen to the monotony of the unaccompanied drone tone merely by removing the mouthpiece and shifting the valve to the inner position to connect the inflatable bag with the mouthpiece tube.

I claim:

- 1. A musical toy comprising,
  - a drone tube having means for producing a musical tone upon the introduction thereto of air under pressure greater than atmospheric pressure,
  - a chanter tube having means for producing a variable musical tone upon the introduction thereto of air under pressure greater than atmospheric pressure,
  - a wind box,
  - means connecting said tubes to said wind box,
  - a flexible, substantially airtight bag connected to said wind box,
  - a mouthpiece connected to said wind box, and
  - valve means in said wind box selectively positionable in two positions,
  - in a first position said valve means connecting said mouthpiece to said bag, and
  - in a second position said valve means connecting said bag to said drone tube and said mouthpiece to said chanter tube.
- 2. In a musical toy having a drone tube, a chanter tube, an inflatable bag and a mouthpiece; a wind box interconnecting said tubes, bag and mouthpiece comprising,
  - means forming a first passage between said bag and mouthpiece,
  - means forming a second passage between said chanter tube and mouthpiece,
  - means forming a third passage between said bag and drone tube,
  - and valve means selectively closing and opening said passages.
- 3. In a musical toy having a drone tube, a chanter tube, an inflatable bag and a mouthpiece; a wind box interconnecting said tubes, bag and mouthpiece comprising,
  - means forming a first passage between said bag and mouthpiece,
  - means forming a second passage between said chanter tube and mouthpiece,
  - means forming a third passage between said bag and drone tube,
  - valve means normally maintaining said second and third passages open and said first passage closed, and means for reversing the condition of said valves.
- 4. In a musical toy having a drone tube, a chanter tube,

- an inflatable bag and a mouthpiece; a wind box interconnecting said tubes, bag and mouthpiece comprising,
  - means forming a first passage between said bag and mouthpiece,
  - means forming a second passage between said chanter tube and mouthpiece,
  - means forming a third passage between said bag and drone tube,
  - and valve means selectively closing and opening said passages,
  - said valve means including normally open valves in said second and third passages and a normally closed valve in said first passage,
  - an operator interconnecting said valves for unitary action, said operator being shiftable between two positions for reversing the condition of said valves.
- 5. In a musical toy having a drone tube, a chanter tube, an inflatable bag and a mouthpiece; a wind box interconnecting said tubes, bag and mouthpiece comprising,
  - a rectangularly configured box,
  - three apertured partitions disposed in spaced parallel relation in said box to form four compartments, said compartments being connected respectively to said tubes, bag and mouthpiece,
  - a valve stem slidably mounted in said box and passing through said apertures, and
  - three valve washer on said stem engageable with respective partitions to close and open their apertures upon the sliding of said valve stem,
  - said valve stem and washers having a first position in which said bag is connected to said mouthpiece and a second position in which said bag and drone tube are interconnected and said mouthpiece and chanter tube are interconnected.
- 6. A musical toy comprising,
  - an elongated wind box,
  - a valve stem longitudinally slidable in said wind box,
  - a pair of resonators connected to the upper surface of said wind box,
  - drone and chanter tubes connected to respective resonators,
  - a mouthpiece projecting from one side of said wind box,
  - an inflatable bag connected to the lower surface of said wind box,
  - and valves on said stem cooperating with valve seats in said wind box for selectively connecting said resonators to said bag and mouthpiece respectively and said mouthpiece to said bag.

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