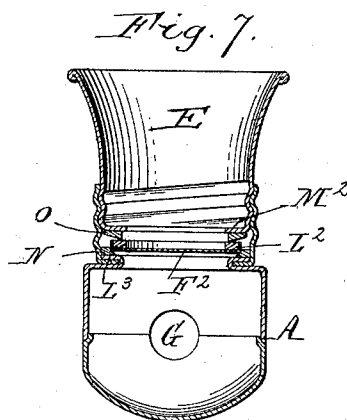
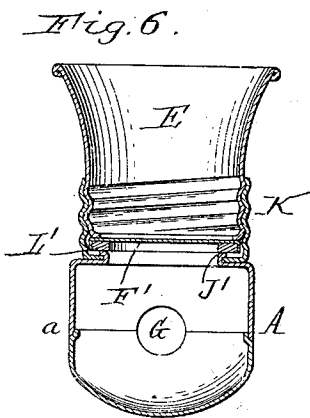
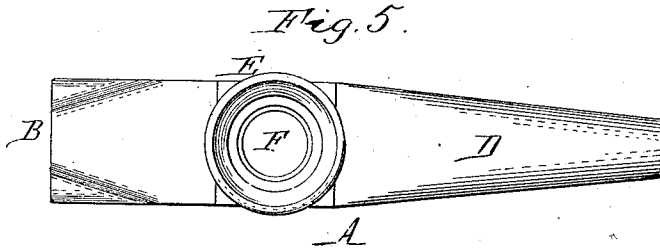
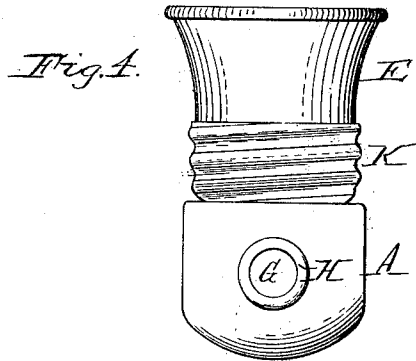
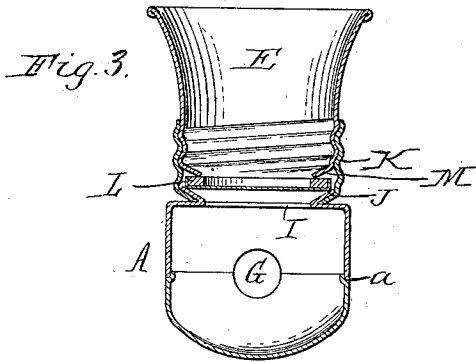
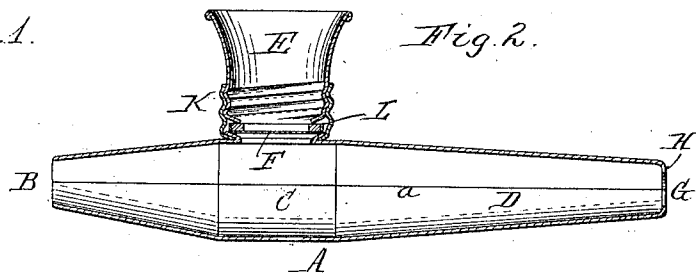
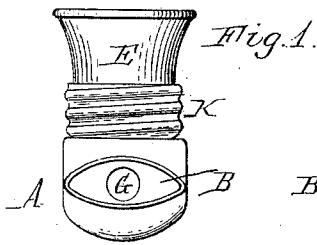


G. D. SMITH.
MUSICAL TOY.

(Application filed May 15, 1901.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE D. SMITH, OF BUFFALO, NEW YORK.

MUSICAL TOY.

SPECIFICATION forming part of Letters Patent No. 700,988, dated May 27, 1902.

Application filed May 15, 1901. Serial No. 60,308. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. SMITH, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Musical Toys or Instruments, of which the following is a specification.

This invention relates to improvements in musical toys or instruments commonly known by the name "kazoo," which comprise, essentially, a hollow instrument-body and a diaphragm adapted to be vibrated to produce musical and other sounds by directing sounds or noises into the instrument-body. In such instruments as heretofore produced there is usually a passage for the breath and sound-waves directed thereinto and a diaphragm located either at one side of or across said passage. When the diaphragm is located across the passage, there is not sufficient escape for the voice-waves and breath, and only the air-vibrations produced by the diaphragm are effective in reproducing the sounds uttered. Such instruments are practically valueless in the hands of an unskilled operator. In the other kind, where the diaphragm is located at the side of the passage, there has not prior to this invention been any provision for confining and rendering effective the air-vibrations made by the diaphragm external to the passage, and the voice-vibrations within the passage are the only effective sound-producing means. To produce the best results, both the internal voice-vibrations within the instrument on the inside of the diaphragm and the external air-vibrations caused by the diaphragm should be properly combined and controlled and mutually aid in the production of the resultant sounds.

One of the primary objects of the present invention, therefore, is to combine and control both the inner voice-vibrations on the one side of the diaphragm and the external air-vibrations on the other side of the diaphragm.

Another object is to provide an instrument of the character described with a controlling passage and outlet for the inner voice-vibrations and a confining and controlling trumpet for the outer air-vibrations.

Another object is to construct the instrument with an enlarged chamber, which I term

an "air-reservoir," and a relatively contracted outlet end for the breath and voice vibrations.

Another object is to provide an instrument with a mouthpiece or portion of novel shape or configuration, whereby the operator can without any particular attention utter into the instrument with great ease any variety of sounds, thus increasing the capacity of the device and facilitating its use. The elliptical shape of the mouthpiece better fits the mouth of the operator and prevents the escape of the sounds at the sides of the mouthpiece. Where a round mouthpiece is employed, it is found that a considerable part of the sounds escape and are not directed into the instrument.

Inasmuch as the diaphragm employed must be taut and should be placed under varying degrees of tension for the best results to accommodate voices of different pitch, and inasmuch as the diaphragm becomes more or less slackened in use by the moisture contained in the user's breath, it is a further object of the invention to provide means for quickly and easily placing the diaphragm under the necessary tension or for changing the degree of tension without liability of damage to the diaphragm.

A further object is to provide the instrument with a trumpet for the external air-vibrations, which shall also serve as the tensioning and holding means for the diaphragm.

Another object is to construct the instrument of sheet metal, whereby the desired shape for the best results can be given to the same without materially increasing the cost or labor of manufacture.

A still further object is the production of an instrument of the character stated which shall be of generally-improved construction and capable of greatly-improved results.

In the accompanying drawings is illustrated an instrument embodying the invention; but I desire it particularly understood that the improvements are not limited in their useful applications to the particular form or forms therein shown for the purpose of an understanding of the invention.

In the accompanying drawings, Figure 1 is an elevational view of the mouth end of an

instrument embodying my invention. Fig. 2 is a longitudinal sectional view of the instrument shown in Fig. 1. Fig. 3 is a transverse sectional view. Fig. 4 is a rear end view. Fig. 5 is a plan view. Fig. 6 is a sectional view of a reversal of the diaphragm holding and tensioning means. Fig. 7 is a similar view of a slightly-different means for the same purpose.

Like letters of reference refer to like parts in the several figures.

A indicates the body of the instrument, which, as will be seen from the drawings, is generally tubular and comprises a relatively wide, large, and substantially elliptical mouth-piece or end B, which gradually increases in dimensions toward a chamber C, which I term an "air-reservoir," and from this chamber the body gradually tapers or diminishes, as indicated at D, toward the rear end of the instrument. Projecting laterally or upwardly from the body intermediate of its ends and adjacent the air-reservoir is a trumpet or flaring device E for more or less confining and controlling the external air-vibrations produced by a diaphragm, which latter is indicated at F and is located at or near the inner or lower end of the trumpet E and to one side of the passage through the body of the instrument.

The air should be more or less confined in the body A to provide a sort of air-cushion and supply of air in the reservoir, and it is for this reason that the rear portion D of the body is contracted toward its rear end. Experiment has demonstrated that better results are obtained by gradually tapering the portion D and providing a relatively small outlet-opening G, formed, as, for instance, by means of an annular inwardly-projecting flange H, than by simply tapering the portion D directly to the small size of the outlet-opening. The rear portion D of the body is externally tapered and rounded, thus enabling the same to be slipped into and form a tight joint with a trumpet or the like when it is further desired to increase the volume of the sounds produced. Experiment has demonstrated also that better results are had when the diaphragm is nearest to the passage through the body, and the metal body enables the diaphragm to be placed farther inward, and is therefore in this respect also an improvement.

As will be seen from Figs. 2 and 3 of the drawings, the body at one side of the air-reservoir is provided with a hole I, surrounded by an outwardly-projecting flange J. This flange serves as a securing means for a threaded trumpet-holding ring, (indicated at K,) and being flared or conical provides an inclined annular bearing-seat for the diaphragm-holding annulus or ring L. As shown in said Figs. 2 and 3, the diaphragm F is secured, as by cementing, to the ring or annulus L, and the latter and the diaphragm bear only at the extreme outer edge on the inclined face of

the flange J. The trumpet E, which is provided with a screw-thread engaging the thread of the trumpet-holding ring K, has also at or near its inner or lower end an inwardly-projecting inclined flange M, which bears on the diaphragm-ring L at or near its inner edge. With such construction it will be immediately apparent that if the trumpet is screwed down onto the diaphragm-ring the latter will be bent or dished inward slightly, thus tightening the diaphragm, and the degree of tautness is governable by the amount of flexure given the diaphragm-ring by the turning of the trumpet. Thus an exceedingly-effective holding and tensioning means for the diaphragm is provided which will not injure the latter.

In Fig. 6 is illustrated a reversal of the parts of the diaphragm holding and tensioning means. In said figure the diaphragm F' and ring L' are reversed, and the ring bears at or near its inner edge on a flange or lip J' on the instrument-body, the inner end of the trumpet in this case bearing on the outer portion of the ring L'.

In Fig. 7 is shown a construction of tensioning means differing only slightly from that disclosed in Figs. 2 and 3 in the following respects: In this case the diaphragm F² and diaphragm-ring L² are located between two washers N and O, the former of which bears on a flat flange L³ on the body of the instrument and has an upper inclined face on which the outer edge of the diaphragm-ring L² rests, and the latter of which washers has an inclined under face bearing at its inner edge on the inner edge or portion of the diaphragm-ring L². The washers are forced together to tension the diaphragm by the trumpet, which for this purpose has an inwardly-projecting flange M².

It will be understood that a body having the interior configuration of the body A could not be made of wood or the like except at an expense rendering wood impractical for instruments of this character. For this reason and for the further reason that the resonant metallic tone given to the sounds by metal render the use of metal for the body a material improvement. In the drawings the body A is shown as being made up of two parts secured together along the joint *a*. This construction, however, is not essential, as the body can be otherwise made.

The use or operation of the instrument is so well understood that it is not believed to be necessary to here state the same.

I claim as my invention—

1. In an instrument of the character described, the combination of a tubular body having an enlarged air-reservoir, provided with an opening, and a contracted outlet end, and a diaphragm over said opening, substantially as set forth.

2. In an instrument of the character described, the combination of a tubular body

having a substantially elliptical mouth portion, an enlarged air-reservoir, and a contracted outlet end, and a diaphragm over an opening in said air-reservoir, substantially as set forth.

3. In an instrument of the character described, the combination of a tubular body having a substantially elliptical mouth portion, an enlarged air-reservoir, and a tapering rear portion provided at its end with an inwardly-extending flange surrounding an outlet-opening, and a diaphragm over an opening in the air-reservoir, substantially as set forth.

4. In an instrument of the character described, the combination of a tubular body portion provided with an opening and having a through-passage which is enlarged adjacent to said opening to form an air-reservoir and is contracted at its outlet end, a diaphragm over said opening, and a trumpet-shaped device surrounding said diaphragm, substantially as set forth.

5. The combination of a tubular body having an opening, of a diaphragm covering said opening, a ring to which said diaphragm is secured, and means for bending said ring to

tension the diaphragm and for clamping the ring in place, substantially as set forth.

6. The combination with a tubular body having an opening surrounded by an inclined face, of a diaphragm, a ring to which the same is secured and which rests on said inclined face, and a trumpet having a screw-threaded engagement with a part carried by the body and acting to bend said ring on said inclined face to tension the diaphragm, substantially as set forth.

7. The combination of a metallic tubular body having an opening intermediate of its ends, an inclined flange surrounding said opening, a screw-threaded ring secured to said flange, a diaphragm, a diaphragm-ring to which the diaphragm is secured and which bears at its outer edge on said inclined flange, and a trumpet screwed into said screw-threaded ring and having a flange which bears on said diaphragm-ring at or near its inner edge, substantially as set forth.

Witness my hand this 9th day of May, 1901.
GEORGE D. SMITH.

Witnesses:

JNO. J. BONNER,
C. M. BENTLEY.