

Oct. 26, 1926.

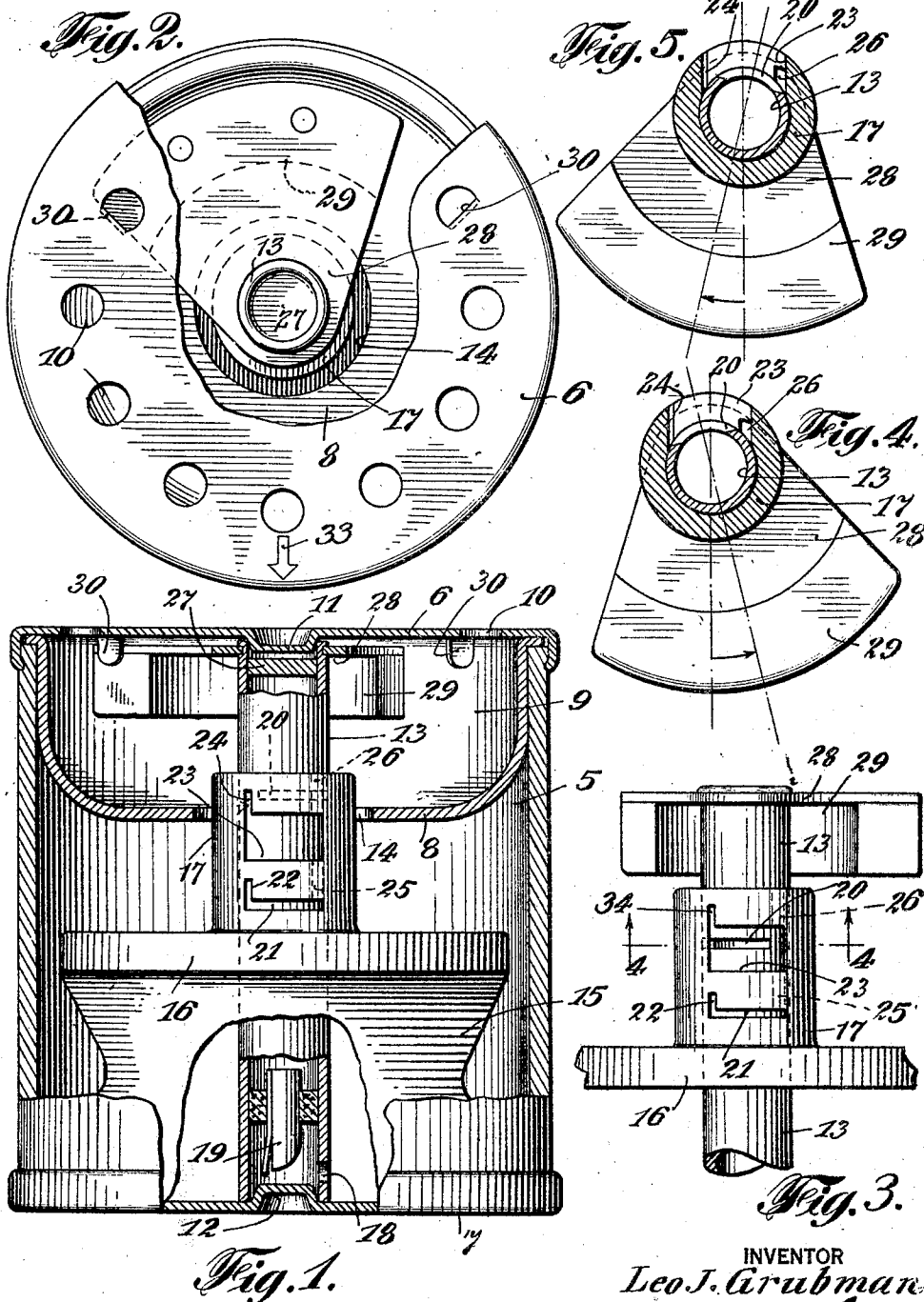
1,604,775

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ARTICULATIVE SOUND PRODUCING DEVICE

Filed Dec. 8, 1923

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

Fig. 7.

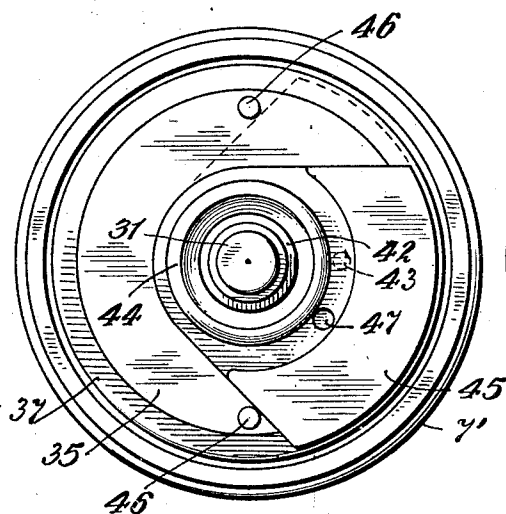


Fig. 9.

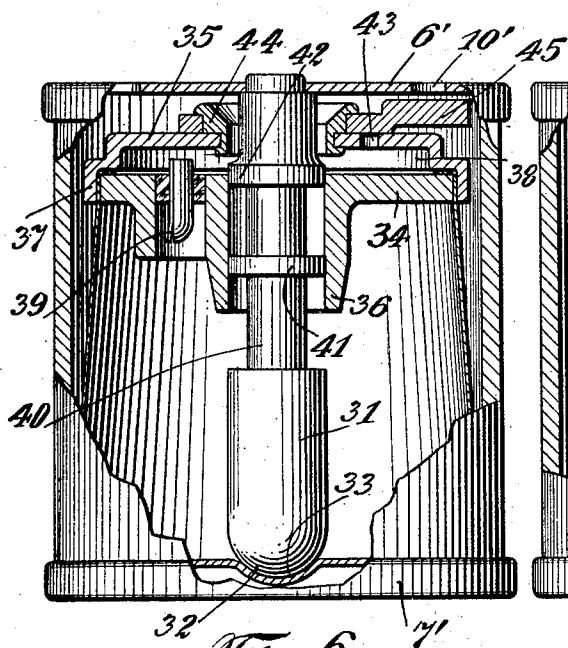
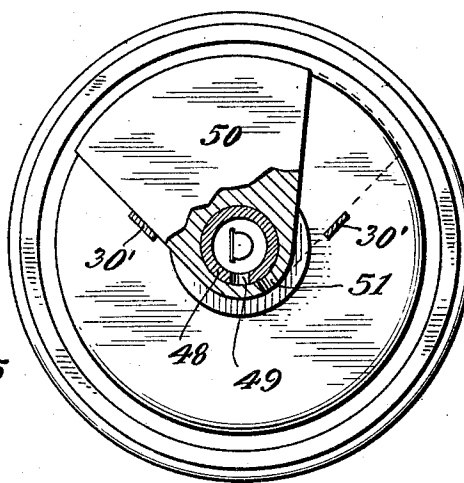


Fig. 6.

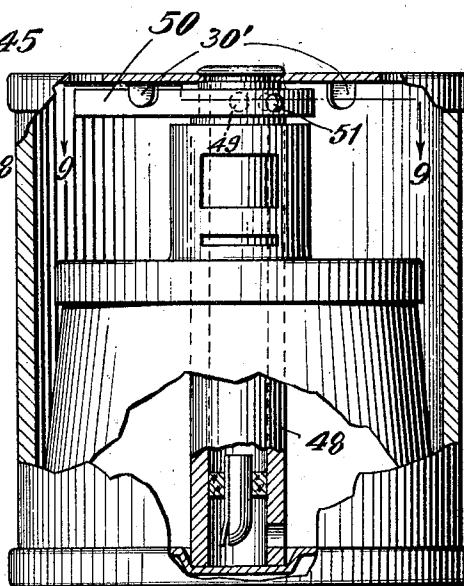


Fig. 8.

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4 Sheets-Sheet 3

Fig. 11.

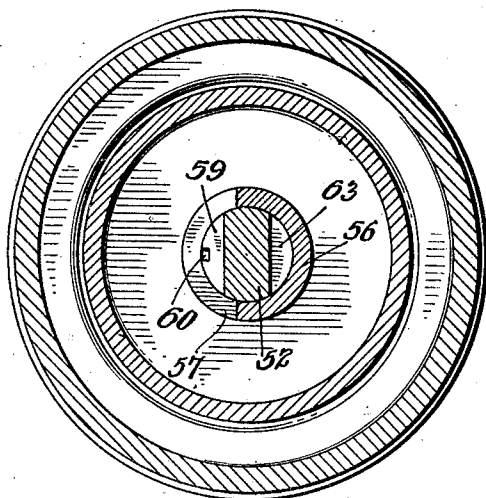


Fig. 12.

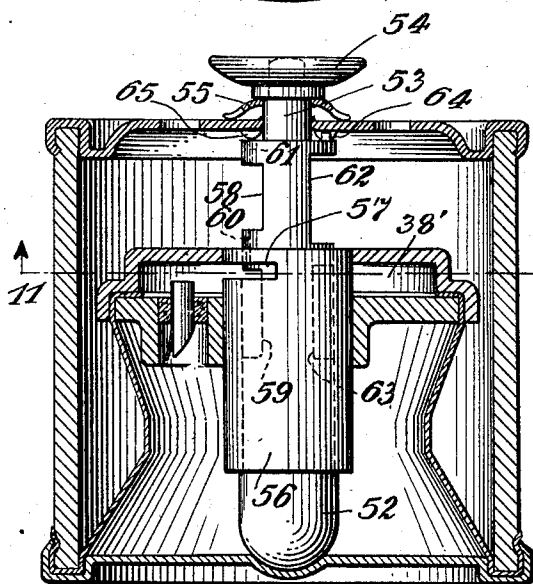
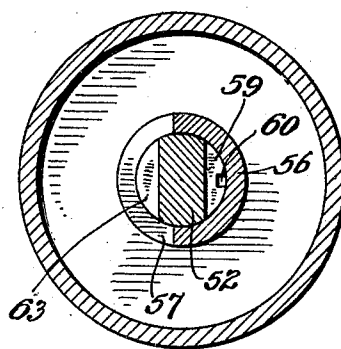


Fig. 10.

Fig. 15.

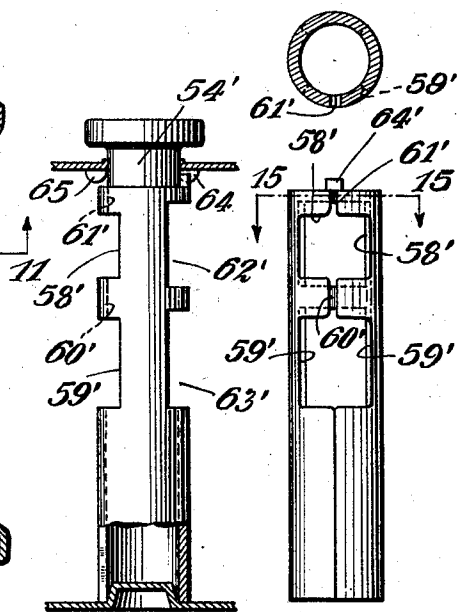


Fig. 13.

Fig. 14.

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ARTICULATIVE SOUND PRODUCING DEVICE

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4 Sheets-Sheet 4

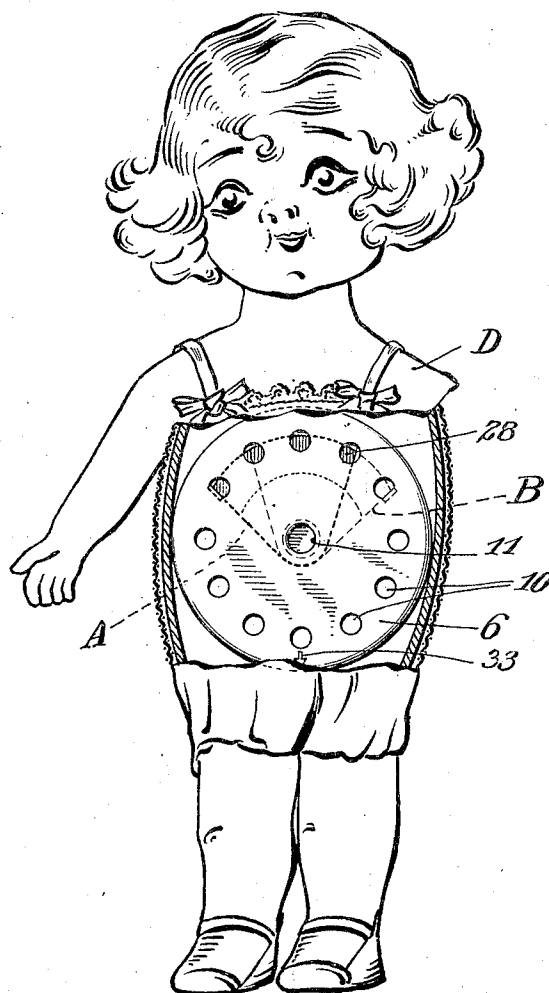


Fig. 16.

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ARTICULATIVE SOUND-PRODUCING DEVICE.

Application filed December 8, 1923. Serial No. 679,294.

This invention relates to articulative sound producing devices for toys and is more particularly identified with devices of that character which have become known in the art as "voices" to be incorporated in the body of a doll for the purpose of producing, upon a proper manipulation of the doll, a simulation of the characteristic infant cry "Ma-ma" or "Pa-pa." I have disclosed one example of a device of this character in my co-pending application for patent filed Dec. 20, 1922, Serial No. 607,931, and my present invention forming the subject matter of this application involves certain improvements therein.

It is one of the important objects of my present invention to provide a sounding device or voice for dolls and other toys which is provided with means wholly enclosed within the body of the doll for governing the emission of sound merely by certain manipulations of the doll or toy figure to cause a realistic simulation of either one of the two exclamations "Ma-ma" or "Pa-pa", at will.

More particularly, in a preferred embodiment of the device, I provide a gravity movable part mounted and arranged with relation to the other parts of the structure to effect the opening or closing of a sound emission orifice or passage when the doll or figure is tilted laterally in one direction or the other from a normal perpendicular position.

As in my prior construction shown in the pending application above referred to, the operative parts of the sound producing device are enclosed within a shell or casing, said device including an axially positioned guide for a gravity movable air expelling head whereby air is forced under pressure through a suitable reed to produce sound, said head and the guide having coacting means to cause an interrupted emission of the sound into one end of the casing. In a preferred form of my present construction, I mount the guide for said air expelling head between the ends of the shell or casing for rotative movement and to one end thereof a suitable weight is attached. The device being mounted in a fixed position in

the body of the doll, it will therefore be apparent that upon tilting the doll the weight will be caused to swing to one side or the other of the axis of said guide, thereby rotating the latter. In such rotation of the guide, certain sound emitting passages or orifices are opened or closed so that the emitted sound will simulate the syllables of either one of two different words, depending upon the direction in which the doll is tilted or inclined from its normal perpendicular position.

The invention has for an additional object to provide a device of the above character, in which the several elements are simple in construction, positive in operation and may be produced and assembled in the completed device at comparatively small cost.

With the above and other objects in view, the invention consists in the improved voice or sound producing device for dolls, as will be hereinafter more fully described, illustrated in the accompanying drawings and subsequently incorporated in the subjoined claims.

In the drawings wherein I have illustrated several practical and desirable embodiments of the invention and in which similar reference characters designate corresponding parts throughout the several views:

Figure 1 is a longitudinal section through the sound producing device showing a preferred embodiment of the invention;

Figure 2 is an end elevation partly broken away;

Figure 3 is a fragmentary elevation of certain parts of the device showing the same in relatively different positions from that seen in Figure 1;

Figure 4 is a horizontal section taken on the line 4-4 of Figure 3;

Figure 5 is a similar section showing the parts in the relative positions seen in Figure 1;

Figure 6 is a view similar to Figure 1 showing a modified form of the device;

Figure 7 is an end elevation, the cover or closure for the casing end being removed to show the internal parts seen in Figure 6;

Figure 8 is a longitudinal section, with parts broken away, illustrating a further embodiment of the device;

Figure 9 is a horizontal section taken on the line 9—9 of Figure 8;

Figure 10 is a longitudinal section showing still another form of my invention;

Figure 11 is a horizontal sectional view taken on the line 11—11 of Figure 10;

Figure 12 is a similar view, the outer shell or casing being omitted and showing another adjustment of the parts;

Figure 13 is a detail elevation partly in section illustrating another form of the adjustable sound emission controlling member;

Figure 14 is a similar view of said member looking at right angles to Figure 13;

Figure 15 is a detail horizontal section taken on the line 15—15 of Figure 14; and

Figure 16 is an elevation of a doll partly in section showing the device mounted in operative position in the doll body.

Referring now more particularly to Figures 1 to 5 of the drawings, the operative parts of the device are enclosed within a shell or casing 5, the body of which may be constructed of heavy cardboard or other suitable material, said casing being closed by the end plates 6 and 7 respectively, preferably though not necessarily, formed of sheet metal. This shell or casing may be of cylindrical or other desired shape and within one end thereof in opposed relation to the end plate 6 a dished or cup shaped wall 8 is arranged and secured in any preferred manner. This wall provides a sound receiving and modifying chamber 9 as will more clearly appear from the following description. The end plate 6 of the casing is provided with a plurality of suitably arranged sound emission openings 10.

The casing end plates 6 and 7 are each provided with a central inwardly projecting boss 11 and 12 respectively, said bosses affording bearings for the opposite ends of an axially positioned sound emission member 13. In this embodiment of my invention, I have shown this member 13 in the form of a metal tube into the opposite ends of which the bosses 11 and 12 respectively, project. Lateral displacement of said tube from its axial position with relation to the casing is thus prevented, and at the same time free rotative movement of said tube is permitted. It will be understood of course, that the inner end wall of the chamber 9 is provided with an opening 14 through which said tube extends.

Between the wall 8 and the end plate 7 of the casing the air expelling means is arranged. In this construction I have shown the air expelling means as consisting of a flexible bellows wall 15 suitably fixed at one of its ends to the wall of the casing 5. A heavy metal head 16 is attached to the other

end of said bellows wall and is provided with a sleeve or tubular extension 17 having free sliding movement upon the tube 13. Thus it will be understood that this tube constitutes a guide for the movable bellows head preventing its lateral shifting movement out of concentric relation with the casing. The wall of said tube 13 adjacent to the end plate 7 of the casing is provided with an orifice 18 which affords communication between the interior of said tube and the interior of the bellows. Adjacent to this orifice a suitable sound producing reed 19 is mounted within the tube 13.

The wall of the tube 13 is also provided with a horizontal circumferentially extending slot 20 located adjacent the inner side of the base portion of the chamber wall 8 and connecting the interior of the tube with said chamber. Through this slot the sounds produced by the reed 19 are emitted. Such emission of sound into the chamber 9 is controlled and intermittently interrupted in the air expelling movement of the bellows head 16. To this end, I provide in one side of the sleeve 17 and adjacent to the head 16 a narrow circumferentially extending slot 21 having an angularly extending portion 22 at one of its ends disposed longitudinally of the sleeve 17. In spaced relation to this slot 21, a second relatively wide circumferential slot or opening 23 is provided in the sleeve wall, said slot or opening likewise having a relatively narrow longitudinal extension 24 at one of its ends positioned in line with the extension 22 of the slot 21. These slots or openings 21 and 23 are adapted to register at different times with the sound emission slot 20 in the wall of the tube 13 as will be readily understood. At the opposite ends of said slots or openings of the sleeve with respect to the extensions 22 and 24 thereof, the inner face of the sleeve wall is provided with a longitudinally extending channel or passage 25 connecting the slots or openings 21 and 23 with each other. In line with this channel longitudinally of the sleeve, a second passage or channel 26 is formed in the inner face of the sleeve and extends from the end of the sleeve to the slot or opening 23. Upon reference to Figures 1 and 5 of the drawings it will be noted that the channels 25 and 26 are spaced from the slot extensions 22 and 24 for a distance which is slightly greater than the length of the slot 20 in the wall of the tube 13 so that said grooves or channels and the slot extensions cannot register at the same time with the slot 20 in the sliding movement of the bellows head. The purpose of this construction will more fully appear from the following description.

The end of the tube 13 adjacent to the boss 11 on the casing plate 6 is closed by means of a suitable plug 27 and to the exterior of this end of the tube a sector

shaped plate is suitably fixed and extends in radial relation thereto. To one side of this plate at its outer end a suitable weight 29 is fixed and the end plate 6 of the casing is provided with properly spaced stop lugs 30 which limit the swinging movement of the weighted plate 28 in each direction. Having now described the several structural features of this embodiment of my invention, its operation will be understood as follows:

Assuming that the device is mounted within the body of a doll or other toy figure, as indicated in Figure 16 of the drawings, and the parts are in the relative positions seen in Figures 1, 2 and 5, the bellows is inflated by moving the doll from a perpendicular to a horizontal position so that the movable bellows head slides upon the tube 13 towards the end plate 6, air entering the interior of the bellows from the chamber 9 through slots 21, 23, 20, and the reed 19 and orifice 18. When the doll is now returned toward an erect position, the bellows head 16 moves by gravity in the opposite direction upon the tube 13 so that air will be expelled from the bellows chamber through orifice 18 and the reed 19, thereby producing sound. In this gravity movement of the bellows head the emission of sound through the slot 20 of the guide tube 13 is interrupted. First the slot 21 will register with the slot 20 in the tube wall, but since the bellows head has just started its movement, sound will issue through the slot 21 in very small volume and under little pressure, simulating the exclamation Oh! As pressure increases in the continued sliding movement of the head after the slot 21 has moved out of registration with the slot 20, sound will then be emitted through the relatively narrow channel or passage 25 and slot or opening 23 into chamber 9 and then simulate the sounding of the nasal letter m. When the wider slot or opening 23 registers with the slot 20, sound is emitted in greater volume and simulates the enunciation of the vowel letter a. After the slot 23 moves out of registration with the slot 20, sound is again emitted through the other of the channels or passages 26 so that the letter m is again sounded, and after the end of the sleeve passes beyond the slot 20, there is a prolonged sounding of the final letter a until the bellows head 16 comes to a position of rest. Thus in this manner a very realistic simulation of the enunciation of the infant cry "Oh! ma-ma" is produced.

Of course it will be understood that by the omission of the slot 21, the sounding of the exclamation Oh! can also be omitted. It will be noted that during this operation above described, the tube 13 is held against casual rotation by the weighted plate 28 which is in contact with one of the stop

lugs 30. This position of the plate 28 is indicated by the dotted lines A in Figure 16 of the drawings.

When it is desired to sound the word "Pa-pa", the doll D is tilted to the right from the perpendicular position shown in Figure 16 so that the weighted plate 28 will swing over to the position indicated by the broken line B and until said plate comes into contact with the other of the stops 30. In this swinging movement of said plate, the tube 13 is of course axially rotated, and such rotation is sufficient in extent to position the emission slot 20 in the wall of said tube out of alignment with the channels or passages 25 and 26 in the wall of the sleeve 17, as shown in Figures 3 and 4 of the drawings. It will, therefore, be understood that in this position of the tube 13, no sound will be emitted through the passages 25 and 26 in the air expelling movement of the bellows head. It will also be noted that the end extensions 22 and 24 of the slots 21 and 23 in the sleeve 17 are now in alignment with one end of the slot 20. Thus in the air expelling movement of the bellows head, slot 21 in sleeve 17 first registering with the slot 20 causes the sounding of the exclamation Oh! and after the horizontal portion of the slot 21 has passed out of registration with slot 20, sound in very much reduced volume will issue through the longitudinal extension 22 of the slot and will be finally cut off by the solid portion of the sleeve 17 between the slots 21 and 23. When the lower edge of the slot 23 moves over the slot 20, there is an initial explosive rush of sound from the latter slot and the enunciation of the letter p is simulated. The a is then sounded during the travel of the wider slot 23 past the slot 20, the emission of sound being then greatly subdued by the narrow extension 24 of said slot and finally cut off altogether by the solid end portion of the sleeve, thus simulating for a second time the enunciation of the letter p as the sleeve passes beyond said slot when the sound is emitted in full volume to again sound the letter a. Thus it will be seen that in this relative position of the parts, the cry or ejaculation "Oh! pa-pa" will be simulated.

It will be apparent from the foregoing that by reason of the slot extensions 22 and 24, in the sliding movement of the bellows head, the emission slot 20 will be completely closed by the solid portion of the sleeve 17 for a shorter period of time than that required for the groove or channel 25 or 26 to pass said slot. Therefore, there will be a shorter sounding of the letter p in the exclamation "Pa-pa" than of the letter m in the exclamation "Ma-ma", and on the other hand, in the sounding of the latter word there will be a comparatively short sound of the letter "a" while in the exclamation

"Pa-pa" this letter will be sounded for a somewhat greater period in view of the slot extensions 22 and 24. In other words by reason of the slot extensions 22 and 24 the letters p and a are sounded in quick succession and there is less lapse of time between the two syllables of the word than occurs in the sounding of the syllables of the word "Ma-ma". I have found that this produces a much more realistic simulation of the cry "Pa-pa" than is the case when the emission of sound simulating the letters p and m extends over the same period of time.

It will, therefore, be seen from reference to Fig. 16 of the drawings that by simply tilting the doll figure to either the left or the right, as the case may be, from the normal perpendicular position, the childish cry "Ma-ma" or "Pa-pa" may be realistically produced as desired. Since all parts of the mechanism are wholly enclosed by the casing 5 within the body of the doll, the operative parts will not be liable to injury or displacement as would be the case where externally projecting parts are provided for manual manipulation.

For the purpose of insuring the correct position of the device within the body of the doll in assembling the same, I provide upon the outer surface of the end plate 6 at a point diametrically opposite to the plate 28 an arrow or other guide symbol indicated at 3. Thus in assembling, the device is positioned with its longitudinal axis disposed transversely of the doll body extending from front to rear and with the arrow or symbol 31 at the lowermost point of the periphery of the end plate 6. Accordingly, the positive functioning or swinging movements of the plate 28 and the rotation of the tube 13 when the doll is tilted in the manner above explained will be assured.

In Figures 6 and 7 of the drawings I have illustrated another embodiment of the invention wherein the axially positioned guide 31 for the movable bellows head is of solid construction. One end of this guide post or member is of rounded or semi-spherical form as shown at 32 for engagement upon a concave seat 33 formed by a central concavo-convex projection in the end plate 7' on one end of the casing or housing. The guide post 31 at its other end is centrally supported in the other casing end plate 6' in any preferred manner, said plate having the sound emission openings 10' therein.

The gravity movable bellows head in this instance consists of two sections 34 and 35 respectively, the section 34 thereof having a sound emission controlling sleeve 36 centrally formed thereon and projecting inwardly towards the opposite end of the bellows. The free end of the flexible bellows wall is engaged against the periphery of the head section 34 and is securely clamped and

held thereon by the peripheral flange 37 formed on the section 35. The main portion of the section 35 is spaced from the section 34 to thereby provide the sound receiving chamber 38 into which the sound initially issues from the reed 39 which is suitably mounted in an opening formed through the head section 34.

The guide post 31 is formed with longitudinally spaced portions 39 and 40 of reduced diameter, which are separated by the flange 41. This flange and the flange 42 at the opposite end of the reduced portion 39 are of the same diameter as the body portion of said post and approximately equal to the internal diameter of the sleeve 36.

The bellows head section 35 is provided with an orifice 43 and there is centrally fixed in this head section a collar 44 the internal diameter of which is approximately equal to the internal diameter of the sleeve 36. At the outer side of the head section 35 the weighted plate 45 is loosely engaged upon the collar 44 for swinging or rotative movement between the spaced stop pins 46 which are fixed in the head section 35. This plate 45 is also provided with an orifice 47 which is adapted to register in one position of said plate with the orifice 43.

In the operation of this form of the device just described, it will be understood that in the collapsing movement of the bellows head, assuming that the plate 45 is in the position indicated in dotted lines in Figure 7 and the orifices 43 and 47 in register with each other, sound first issues from chamber 38 through the collar 44 and simulates the exclamation Oh! While the flange 42 is still disposed within the collar 44, the nasal letter m is sounded by the emission of sound from the chamber 38 through the orifices 43 and 47. After the collar 44 passes below the flange 42, the letter a is sounded and when the flange 41 is engaged in collar 44, sound issues through orifices 43 and 47 to again sound the nasal letter m and after the collar 44 passes below flange 41, the letter a is sounded a second time as the collar 44 traverses the reduced portion 40 of the guide 31. Thus the entire exclamation "Oh! ma-ma" is realistically articulated. When the doll in which the device is mounted is properly manipulated or tilted, as above explained, to dispose the weighted plate 45 in the position shown in full lines in Figure 7, the orifice 43 is closed by said plate so that the nasal letter m will not be sounded and the exclamation "Oh Pa-pa" will then be simulated in the operation of the device.

In Figures 8 and 9 I illustrate another alternative form of the device in which the axial guide 48 for the movable bellows head is in tubular form and bears a fixed relation to the end plates or closures of the casing or housing. In this construction the

movable bellows head is provided with a sleeve extension having sound emission control openings to co-operate with a slot or opening in the wall of the tubular guide 48 in a similar manner to the construction shown in Figure 1 of the drawings. In this case, however, the grooves or channels 25 and 26 shown in Figure 1 are omitted and in lieu thereof the wall of the tubular guide 48 adjacent to the perforated end plate of the casing through which the sounds are finally emitted is provided with an orifice 49. The swinging plate 50 mounted upon this end of the tube is likewise provided with an orifice 51 to register with the orifice 40 when the plate is in the dotted line position shown in Figure 9 of the drawings for the purpose of simulating the sound of the word "Ma-ma", while when said plate is in the position shown in full lines and the orifice 49 closed, the word "Pa-pa" will be sounded. The swinging movements of the plate 50 are limited by the spaced stop lugs 30' on the end plate of the casing. From the foregoing description, the operation of this embodiment of my invention will be readily understood.

In Figures 10 and 11 of the drawings I have illustrated a further modification of the device wherein the axially positioned guide post 52 for the movable bellows head is of solid construction and at one end is formed in a similar manner to the post 31 of the construction illustrated in Figure 6 for rotative engagement upon an internal seat formed on one of the casing end plates. The other end of said post is of reduced diameter and is rotatably mounted in the other end plate of the casing and extends exteriorly thereof as shown at 53, said end of the post having a suitable operating head or button 54. A spring washer 55 is interposed between said head and the end plate of the casing to hold the post against casual rotation from an adjusted position.

The movable bellows head is of similar construction to that shown in Figure 6 with the exception that said head is not provided with the collar 44 and the swinging plate 45. In this construction, I provide the movable bellows head with a relatively long sleeve 56 extending into the bellows and having sliding movement upon the guide post 52. This sleeve at one end is formed with a circumferentially extending slot 57 communicating with the sound receiving chamber 38' of the bellows head.

On one side the post 52 is provided with spaced longitudinally extending recesses 58 and 59 respectively. The portions of the post separating these recesses from each other and at the end of the recess 58 adjacent to the reduced extension 53 of the post are provided with longitudinally extending grooves or channels 60 and 61 respectively.

The diametrically opposite side of the post 52 is also formed with the longitudinally spaced recesses 62 and 63 but the post on this side is not provided with grooves or channels corresponding with the grooves 60 and 61 above referred to. At the inner end of the reduced portion 53 the post is provided with a stud 64 to engage suitably spaced stop lugs 65 on the perforated end plate of the casing.

It will be apparent from the above description that when the post 52 is in the position shown in Figure 10 so that the grooves or channels 60 and 61 will register with the slot or opening 57 in the sleeve 56 carried by the movable bellows head, the emitted sounds will simulate the cry "Ma-ma", the m being sounded by the passage of sounds from chamber 38' through these grooves or channels. By turning or rotating the post by means of the knob 54 through 180°, the recesses 58 and 59 and the grooves 60 and 61 will be positioned at the opposite side of the sleeve 56 with respect to the slot 57 therein, while the recesses 62 and 63 will be in position to register with said slot. This position of the post is illustrated in Figure 12 of the drawings. When the device is now operated, the emitted sounds will simulate the cry of "Pa-pa".

The form of my invention last described may also be provided with a tubular guide post of sheet metal for the bellows head if desired. In Figures 13, 14 and 15 of the drawings, I have illustrated such a guide post formed of a single sheet of metal bent into tubular shape. This metal sheet may be cut in blank form, the intermediate portion thereof having the openings 62' and 63' while each of the mating edges of the sheet are provided with longitudinally spaced recesses 58' and 59' so that when the sheet is bent into tubular form and its edges brought together, the corresponding recess 58' and 59' will mate with each other. The opposed edges of the metal sheet between the spaced recesses and at the end of the recesses 58' are trimmed or cut so that they are spaced from each other as indicated at 60' and 61', thereby providing the equivalent of the channels or grooves 60 and 61 shown in Figure 10 of the drawings. To the end of this tubular post an operating head or button 54' suitably mounted in the perforated end plate of the housing is attached, the end of said post being also provided with a suitable lug or finger 64' to engage the spaced stops on the casing plate. In the use of this tubular post, the other end plate of the casing will be provided with the central boss as shown in Figure 1 of the drawings to project into the open end of said post.

From the foregoing description considered in connection with the accompanying drawings, the several illustrated forms of

my present improvements will be clearly understood. It will be seen that I have succeeded in producing a device, which, by the mere manipulation of the doll or toy within which it is mounted may be caused to simulate the sounding of either one of two different exclamations at will. In the preferred embodiment of the invention, all of the operating parts are wholly contained or encased within the shell or casing and there are no externally projecting elements which might be accidentally broken or damaged to such an extent as to preclude the proper operation of the device. At the same time I have succeeded in accomplishing the desired results without unduly complicating devices of this character as heretofore constructed or greatly adding to the cost of production thereof. It will be understood that my present improvements are not concerned with any particular construction of the bellows whereby the air is expelled for the production of sound or in particular to the mounting of said bellows for operative movement within the casing, as illustrated in the accompanying drawings. Further, it will be apparent that although I have disclosed several practical constructions of the device, it may be possible to also obtain comparable results by means of still other alternative constructions. Accordingly it is to be understood that I reserve the privilege of resorting to all such legitimate changes in the form, construction and relative arrangement of the several parts as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. In a sound producing device, a casing having an air chamber therein, a sound producing reed, a member movable in said chamber to expel air therefrom through said reed, co-acting sound emission controlling parts, one of said parts constituting a guide for said member, and the other of said parts having separate means permitting the emission of sound in relatively different volume as said member moves in one direction upon said guide part, one of said parts being provided with additional means operable at will to render one of said sound emission permitting means effective or ineffective and thereby vary the character of the emitted sound.

2. In a sound producing device, a casing having an air chamber therein, a member movable within the casing for expelling air from said chamber, a sound producing reed through which the air is expelled, coacting parts controlling the emission of sound in certain definite volume, one of said parts having a passage for the emission of sound therethrough in relatively different volume, and gravity controlled means movable in a plane at right angles to the plane of movement of said member and operable at will to

open or close communication through said passage between the source of sound production and the atmosphere.

3. In a sound producing device, a casing having an air chamber therein, a guide positioned within said casing, a member movable along said guide for expelling air from said chamber, a sound producing reed through which the air is expelled, said member and the guide having coacting parts controlling the interrupted emission of sound in definite volume, one of said parts having a passage through which sound is adapted to be emitted in relatively different volume, and gravity controlled means mounted on one of said parts and operable at will to open or close communication through said passage between the source of sound production and the atmosphere.

4. In a sound producing device, a casing having an air chamber therein, an axially positioned guide supported by the casing ends, a member movable along said guide for expelling air from said chamber, a sound producing reed through which the air is expelled, said member and the guide having coacting means controlling the interrupted emission of sound in definite volume, one of said parts having a passage through which sound is adapted to be emitted in relatively different volume, and a gravity movable member mounted upon one of said parts and also enclosed within said casing and operable at will by displacement of the casing from its normal position to open or close communication through said passage between the source of sound production and the atmosphere.

5. In a sound producing device, a casing having sound emission openings at one end and an air chamber enclosed within said casing, an axially positioned guide rotatably supported upon the casing ends, a member movable by gravity along said guide for expelling air from said chamber, a sound producing reed through which the air is expelled, said member and the guide having coacting means controlling the emission of sound in certain definite volume when the guide is in one position, one of said parts having a passage through which sound is adapted to be emitted in relatively different volume when the guide is rotated to another position, and means for rotating said guide to open or close communication through said passage between the source of sound production and the atmosphere.

6. In a sound producing device, a casing in communication with the atmosphere at one of its ends and an air chamber in said casing, an axially positioned guide rotatably supported upon the casing ends, a member movable by gravity along said guide to expel air from said chamber, a sound producing reed through which the air is expelled, said

member and the guide having coacting means controlling the emission of sound in certain definite volume when the guide is in one position, one of said parts having a
 5 passage with which the sound emission control means of the other part is adapted to coact for the emission of sound through said passage in relatively different volume when the guide is rotated to another position, and
 10 a weighted member fixed to said rotatable guide for swinging movement in a plane at right angles to the plane of movement of said air expelling member and operable at will to open or close communication through
 15 said passage between the source of sound production and the atmosphere.

7. In a sound producing device, a casing having sound emission openings in one end thereof and an air chamber within said casing,
 20 an axially positioned tubular guide post rotatably supported upon the casing ends, a gravity movable member supported by said tube for expelling air from said chamber, a sound producing reed mounted within one
 25 end of the tube through which the air is expelled, said tube having a sound emission opening in its wall and said member provided with a part coacting with said opening to control the emission of sound in certain
 30 definite volume when said post is in one position, said part being provided with a passage through which sound is adapted to be emitted in relatively different volume when said post is rotated to another position,
 35 and a weighted member fixed to said guide and movable by gravity to rotate the guide in either direction and thereby open or close communication between the source of sound production and the atmosphere
 40 through said opening in the guide and said passage.

8. In a sound producing device, a casing having sound emission openings in one wall thereof, a sound producing reed and means
 45 enclosed within said casing for expelling air through said reed, means for controlling the emission of sound in variable volume to simulate the pronunciation of different letters, said means including a part having
 50 a sound emission passage and a weighted gravity movable member enclosed within said casing and optionally operable independently of the air expelling means to open or close communication between the source
 55 of sound production and the atmosphere through said passage.

9. In combination with a hollow toy structure, a sound producing device permanently mounted within and wholly concealed
 60 by said structure, said device including a casing having sound emission openings in its wall, sound producing and sound emission controlling means contained within said casing and rendered operable by manipulation
 65 of said figure, and additional means wholly

enclosed within said casing and rendered operable by further manipulation of said figure to govern the operation of said sound emission controlling means and selectively effect the emission of sound in simulation of
 70 either one of two characteristic cries.

10. In combination with a doll having a hollow body, a sound producing device mounted within said body and wholly concealed thereby, said device including a bellows
 75 having a gravity movable air expelling head, a guide for said head positioned transversely of the doll body, a sound producing reed through which the air is expelled in the movement of said head in one direction,
 80 and means operative in the air expelling movement of the head for controlling the emission of the sound, said means including a part movable by gravity in a plane at right angles to the direction of movement of said
 85 head upon tilting the figure laterally in either direction from a normal perpendicular position to thereby selectively govern the volume of sound emission to cause the emitted sounds to simulate the enunciation
 90 of either one of two characteristic infant cries.

11. In a sound producing device, a casing having an air chamber therein, a guide axially positioned in said air chamber, a member
 95 movable by gravity along said guide for expelling air from said chamber, a sound producing reed through which the air is expelled, said member and the guide having means for controlling the emission of sound
 100 in variable volume to simulate the pronunciation of different letters, and means operable at will to adjustably position one of said parts relative to the other and govern the operation of said sound emission controlling means.
 105

12. In a sound producing device for simulating the infant cries "Ma-ma" and "Pa-pa," sound-producing means, co-operating sound
 110 emission controlling elements each having sound escape passages, and gravity controlled means associated with one of said elements and operable at will to move said element with respect to the other element and relatively position said sound escape passages
 115 to cause the emission of sounds simulating one or the other of said words.

13. In a sound producing device for simulating the infant cries "Ma-ma" and "Pa-pa," coacting sound emission controlling elements
 120 having means for effecting the simulated pronunciation of letters in relatively different timed relations and means associated with one of said elements and operable at will to position said element relative to the element with which it co-acts to change the
 125 time relation in the emission of sounds and thereby effect a realistic simulation of the pronunciation of the syllables in either one of said words.
 130

14. In a sound producing device for simulating the infant cries "Ma-ma" and "Pa-pa," sound producing means, coacting sound emission controlling elements one of which is adjustable relative to the other, each of said elements having sound emission control means for simulating the pronunciation of the letters in said words in relatively different time relation when said elements are relatively adjusted to different positions, and gravity controlled means associated with one of said elements and operable at will to adjustably position the same and dispose the sound emission control means thereof relative to the sound emission control means of the other element and thereby effect the desired change in the time relation of the emission of sounds to produce a realistic simulation of the pronunciation of the syllables in either one of said words.

15. In a sound producing device, a casing having an air chamber therein, a sound producing reed, means enclosed within said chamber for expelling air through said reed including a gravity movable element, and means for controlling the emission of sound comprising a part carried by said element, a relatively stationary member with which said part has sliding engagement, said part and member being relatively adjustable and having means controlling the emission of sound in different adjusted relations thereof to vary the time relation in the emission of sounds simulating the letters of two different words in the gravity movement of the air expelling member in one direction, and means for effecting such adjustment to produce a realistic simulation of the pronunciation of either one or the other of said words at will.

16. In a sound producing device, a casing, a sounding reed, a member movable in said casing for operating said reed, coacting parts

each having means controlling the emission of the sound produced by said reed, and gravity controlled means rendered operable upon tilting said casing from a normal position to render a portion of the sound emission control means of one of said parts effective or ineffective and thereby vary the character of the emitted sounds.

17. In a sound producing device, a casing, a sounding reed, a member movable in said casing for operating said reed, a relatively stationary element in the casing, said element and said member having coacting means controlling the emission of sound produced by the reed in a certain definite volume, one of said parts having additional means to cooperate with the sound emission means of the other part and effect the emission of the sound in relatively different volume, and means for adjusting said parts relative to each other to render the latter means effective or ineffective at will.

18. In combination with a doll, a voice mechanism wholly enclosed within said doll including sound producing means and coacting sound emission controlling parts operative when the doll is moved in one direction from a predetermined position to effect an articulated emission of the sound simulating the word "Ma-ma," and means cooperatively associated with one of said sound emission controlling parts and automatically operable when the doll is moved in an angular direction with respect to said first named direction of movement to modify the operation of said sound emission controlling means and cause the same to effect the articulated emission of the sound in simulation of the word "Pa-pa."

In testimony that I claim the foregoing as my invention I have signed my name hereunder.

LEO J. GRUBMAN.