Nov. 11, 1924. 1,515,477

L. J. GRUBMAN

SOUND PRODUCING DEVICE

Filed Dec. 28, 1922

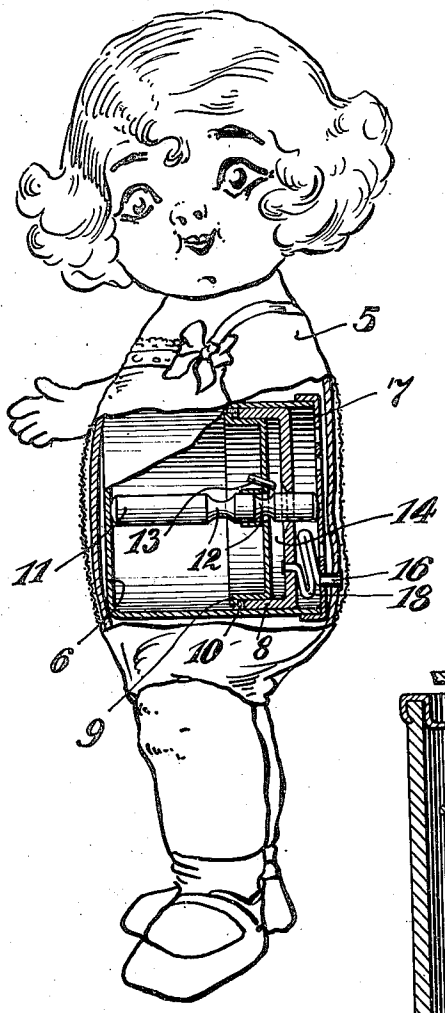


Fig. 1.

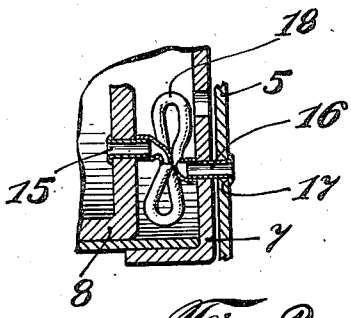


Fig. 2.

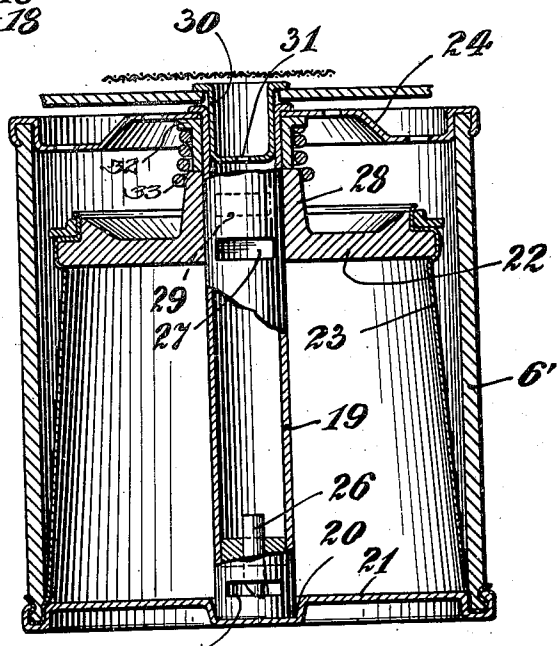


Fig. 3

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UNITED STATES PATENT OFFICE.

LEO J. GRUBMAN, OF NEW YORK, N. Y.

SOUND-PRODUCING DEVICE.

Application filed December 28, 1922. Serial No. 609,398.

To all whom it may concern:

Be it known that I, LEO J. GRUBMAN, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Sound-Producing Devices, of which the following is a specification.

This invention relates to sound producing devices, such as are adapted to be incorporated in the body of a doll for the purpose of simulating an infant cry, such as the exclamations "Ma-Ma" or "Pa-Pa". My present improvements comprehend the provision of means in a sound producing device of this character which will enable either of these words to be realistically simulated in the operation of the device, at the option of the child and without necessitating the positive manipulation or movement of any mechanical part.

To this end I provide a means for sounding the consonant letter "M" which may be rendered inoperative when the device is actuated, merely by positioning the finger over the sound emission orifice. In a copending application for patent, filed December 20th, 1922, Serial No. 607,931, I have described a device for producing this result, which, however, necessitates the positive manual manipulation or movement of a valve member to open or close the nasal orifice through which the consonant letters are sounded. It will be seen from the following description, that in my new construction, I have greatly simplified the device in this respect and have provided means whereby either of the words "Ma-Ma" or "Pa-Pa" can be sounded which does not necessitate that the child shall be required to comprehend the construction of the device or the manner in which certain parts shall be moved or manipulated. It will also be appreciated that by dispensing with such moving parts, the manufacturing cost of the article as a whole will be reduced.

With the above and other objects in view, the invention consists in the improved sound producing device and in the form, construction and relative arrangement of its several parts as will be hereinafter more fully described, illustrated in the accompanying drawings and subsequently incorporated in the subjoined claims.

In the drawing wherein I have illustrated several simple and practical embodiments of my present improvements and in which similar reference characters designate corresponding parts throughout the several views:

Figure 1 is an elevation partly in section illustrating the mounting and arrangement of the device within the body of the doll.

Figure 2 is an enlarged detail section showing the arrangement of the nasal sound outlet tube and its connection with the fixed tube in the body wall of the doll and the sound chamber of the air expelling member; and

Figure 3 is an enlarged sectional view illustrating a modified form of the device.

In Figure 1 of the drawings I have illustrated the sound producing device on a somewhat exaggerated scale mounted within the body of a doll 5. In the present instance I have shown the sound producing means as including a cylindrical drum or casing 6 suitably arranged and mounted in any approved manner within the doll body and in fixed relation to the walls thereof. This casing provides an air receiving chamber of suitable capacity for the production and emission of the desired sounds. At one of its ends this casing is closed by a perforated head 7 which is preferably opposed to the rear or back wall of the doll body. Within the casing 6 an air expelling piston or member 8 is mounted for gravity movement, said member having a marginal flange frictionally engaging the walls of the casing. The member 8 is of sufficient weight to insure its gravity movement in the casing against the pressure of air beneath the same. Within this flange of the expelling member an annular cup shaped member 9 is fitted, a packing ring 10 of suitable material being arranged between the annular wall of the member 9 and the edge of the marginal flange on the member 8 so as to prevent the escape of air between said flange of the expelling member and the wall of the casing 6. Each of the parts 8 and 9 is provided with a central opening through which an air emission controlling member 11 is loosely disposed, said member being provided with longitudinally spaced annular grooved or reduced portions 12. This member at its ends has sliding contact with the head 7 and the base wall of the casing 6 respectively, it being understood that said member does not act as a support for the air expelling member 8 so that there is no frictional resistance offered by the member 11 to the

free sliding or gravity movement of the air expelling member.

A sounding reed 13 is fixed in the wall of the member 9. It will be noted that the body wall of this member is disposed in spaced relation to the corresponding part of the member 8, thereby providing an air expansion or sounding chamber 14 into which the reed 13 extends. The relative mounting and arrangement of the air expelling member and the air emission controlling member within the casing 6 is fully described and claimed in my Patent No. 1,466,877, issued September 4, 1923. For the purposes of present explanation, it will suffice to state that when the air expelling member is disposed in the position seen in Fig. 1, and the doll moved from an upright position to a prone position with the face downward, said expelling member moves by gravity downwardly in the casing. The air compressed beneath said member is forced through the sounding reed 13 and as the central opening in the wall of the member 8 successively registers with the grooved or reduced portions 12 of the member 11, the sound issues from the chamber 14 and finally passes through the emission apertures in the head 7 of the casing, such sounds simulating the sound of the spoken vowel "A".

For the purpose of sounding the consonant letter "M" when the opening in the wall of the member 8 is closed in the initial movement of said member and in its movement between the spaced reduced portions 12 of the member 11, I provide a small diameter metal tube 15 fixed in the wall of the member 8 and communicating with the sound chamber 14. A similar tube 16 extends through the wall of the head 7 and has its outer open end suitably fixed in the rear or back wall of the doll body as shown at 17. These tubes are connected by a length of flexible tubing 18 which will move or flex freely in the gravity sliding movements of the member 8.

When the outer end of the metal tube 16 is open, in the initial gravity movement of the member 8 and before the opening therein registers with the first of the grooves 12 in the member 11, the sound issues from the chamber 14 through the flexible tube 18 and finally from the outlet tube 16 and simulates the nasal sound of the consonant letter "M". When the opening in the member 8 arrives opposite the first groove 12, the vowel "a" will then be sounded followed by the second sounding of the consonent "M" as said opening is closed by the portion of the member 11 between the spaced grooves. In the continued gravity movement of said member the vowel letter "A" is again sounded, thus completing the sounding of the word "Ma-Ma". If, however, the finger is merely placed over the open end of the tube 16 so that the sound waves cannot issue therefrom, then the consonant letter is not sounded and the sounds issuing at intervals from the sound chamber 14 of the air expelling member will then simulate the spoken word "Pa-Pa". It will be understood that the letter "p" when pronounced does not have the harsh nasal sound of the consonant letter "m". Therefore the initial explosive release of sound from the chamber 14 in conjunction with the immediate sounding of the letter "a" aided by the imagination produces a sufficiently realistic simulation of the spoken pronunciation of the syllable "pa." Thus, it will be seen that the child may at will cause the sound producing device to produce sounds simulating either of these words.

In Figure 2 of the drawings I have shown an alternative form of the invention as applied to another type of sound producing device. In this construction the air emission member is in the form of a tube 19 having one of its ends seated in a central recess or depression 20 in the head 21 closing one end of the casing 6'. The air expelling member 22 is freely slidable on the tube 19 and has securely fixed to its perimeter one end of the flexible bellows wall or membrane 23, the other end of which is secured by the closure head 21 to the wall of the casing 6'.

The other end of the tube 19 is fixed in the apertured head 24 closing the other end of the casing. Adjacent the end of the tube seated in the recess 20, said tube is provided with an air inlet orifice 25 and adjacent thereto a sounding reed 26 is suitably secured within the tube. Said tube in spaced relation to its other end is provided with an air emission orifice 27. The member 22 which moves by gravity along said tube is formed with a central boss or extension 28 projecting from one side thereof having a sound controlling orifice 29 therein.

The construction just described is fully disclosed and claimed in my several co-pending applications, Ser. Nos. 542,884, filed March 11th, 1922, 601,725, filed November 18, 1922, and 682,675, filed December 26, 1923, respectively.

The end of the tube 19 fixed in the head 24 is open and in the open end of said tube a metal thimble or sleeve 30 is frictionally fitted, the inner end wall of said sleeve having a nasal orifice 31. The outer end of the metal sleeve or thimble is suitably fixed in an opening provided in the rear end of the doll body. It will thus be seen that when the member 22 moves downwardly on the tube from the position shown in Figure 3, when the outer end of the thimble 30 is uncovered by the finger, the consonant letter "M" will be sounded prior to the first vowel sound "A" which will issue through the aperture 29 when it comes into registration

with the opening 27. When the opening 27 is again closed by the end of the boss 28 the consonant letter "M" will again be sounded and when the boss 28 passes entirely below the opening 27 the second vowel sound "A" will issue from said opening. However, by simply placing the finger over the outer end of the sleeve or thimble 30 to close the same, only the vowel letters "A" will be sounded in the gravity movement of the air expelling member 22, as above explained. In this construction I may provide a sleeve 32 and coil spring 33 surrounding the tube 19, one terminal coil of the spring being free to receive the boss 28 on the gravity movable bellows head and prevent axial shifting of said head when the bellows is inflated until the center of gravity is vertically disposed, when the holding action of the spring coil is overcome and said head released for gravity movement on the tube 19. This, however, constitutes no essential feature of the present invention and may be dispensed with if desired.

In both of the constructions above referred to, it will be seen that it is not necessary to manipulate a valve or any other mechanical part in order to change the character of the sounds whereby the words "Pa-Pa" or "Ma-Ma" may be simulated. The end of the tube or sleeve 16 or 30 is covered by the dress or undergarments of the doll, which, however, will not interfere with the free issuance of the sound when the finger is not placed over the open end of the tube. It will thus be seen that I have materially simplified the former construction shown in my co-pending application so that the child can easily control the production of the desired sounds without necessitating an understanding of the operating principle or the manner in which certain parts must be moved or manipulated. At the same time, however, highly efficient results are obtained and the same realistic simulation of the spoken words is produced with the present construction as in the arrangement disclosed in my pending application.

I have herein illustrated and described two examples of sound producing devices to which the present improvement might be applied. It will, however, be readily understood that this implies no limitations upon the utility of the present invention, as in view of its extremely simple character, the device might likewise be employed in connection with various other constructions of sound producing devices of this character. It will further be understood that while I have herein disclosed two specific embodiments of the present improvements, the same desirable result might be obtained in other alternative constructions thereof. Accordingly, I reserve the privilege of resorting to all such legitimate changes in the 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, means operatively mounted within said casing for producing sounds simulating spoken vowels, and additional sound emission means having an outlet part extending through one wall of the casing and through which sounds simulating a spoken consonant letter are emitted, said outlet adapted to be closed at will whereby the device may be caused to simulate the sounding of one word when said outlet is open and of a different word when said outlet is closed.

2. In a sound producing device, a casing, means operatively mounted within said casing for producing sounds simulating spoken vowel letters, said means including a tubular member having a sound emission orifice in its wall and a gravity movable element cooperating therewith, and an additional sound emission means having a part adapted to be mounted in a supporting wall and extending into one end of said tubular member and having an emission orifice spaced from said first named orifice and through which sound is emitted in relatively small volume to simulate spoken consonant letters when the first named orifice is closed by said gravity movable element.

3. In combination with a figure toy, a sound producing device mounted therein and including a casing, means operatively mounted within said casing for producing sounds simulating spoken vowels, and additional sound emission means having an outlet part extending through one wall of the figure toy and through which sounds simulating a spoken consonant letter are emitted, said outlet adapted to be closed at will whereby the device may be caused to simulate the sounding of one word when said outlet is open and of a different word when said outlet is closed.

4. In combination with a figure toy, a sound producing device mounted therein and including a casing, means operatively mounted within said casing for producing sounds simulating spoken vowels, and additional means for emitting a sound simulating a spoken consonant letter, said means having a tubular part mounted in one wall of the figure, the outer end of said part being exposed and accessible for the application of the finger thereto, whereby said consonant sound emitting means may be rendered inoperable at will.

5. In combination with a doll, a sound producing device mounted in the body thereof and including a casing, means operatively arranged in said casing for producing and

controlling the emission of sounds simulating spoken consonant letters, said means including a sound emission tube, and a sleeve extending into one end of said tube and having a closed inner end provided with a central orifice through which sounds simulating spoken consonant letters are emitted, the other end of said sleeve being open and extending through the body wall of the doll whereby said open end of the sleeve may be closed by the application of the finger thereto to render the consonant sounding means inoperative at will.

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

LEO J. GRUBMAN.