April 16, 1935. L. J. GRUBMAN 1,998,082

SOUND PRODUCING DEVICE

Filed March 5, 1932

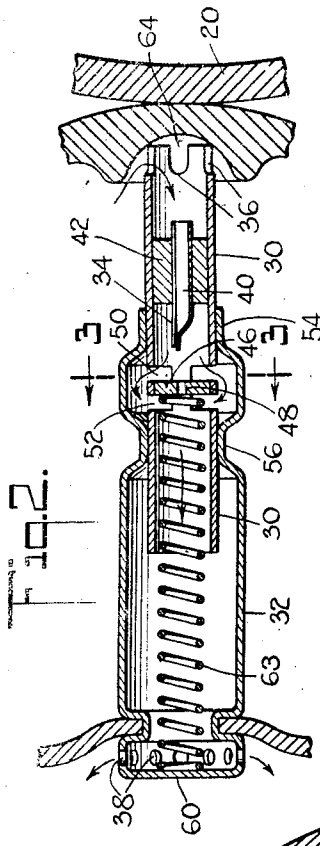


Fig. 2.

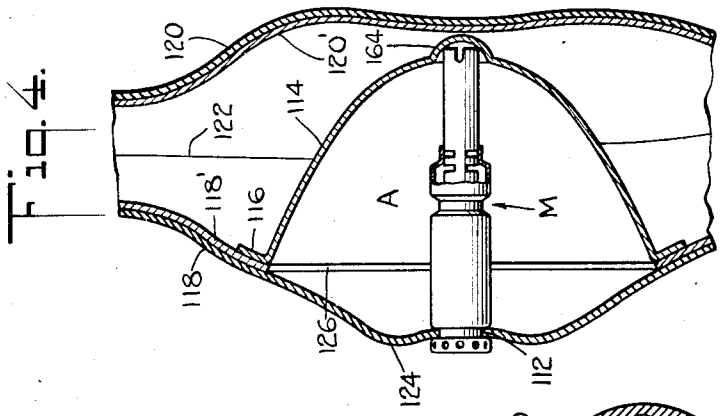


Fig. 4.

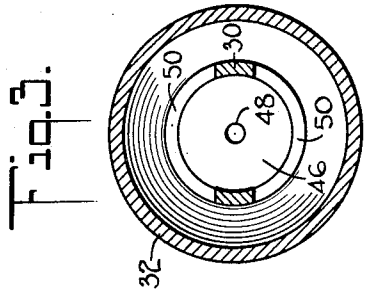


Fig. 3.

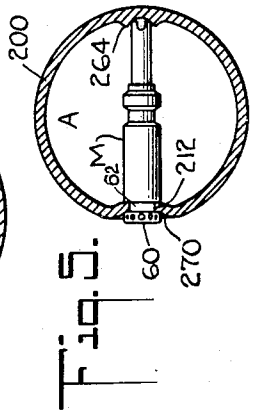


Fig. 5.

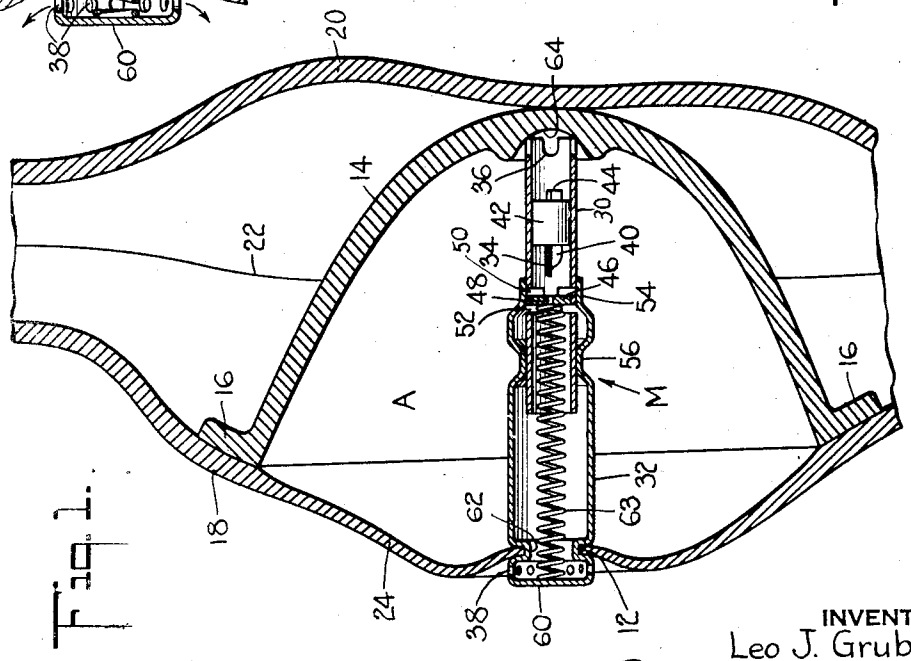


Fig. 1.

INVENTOR
Leo J. Grubman
BY James & Franklin
ATTORNEYS

Patented Apr. 16, 1935 1,998,082

UNITED STATES PATENT OFFICE

1,998,082

SOUND PRODUCING DEVICE

Leo J. Grubman, Belle Harbor, N. Y., assignor to Voices, Incorporated, Newark, N. J., a corporation of Delaware

Application March 5, 1932, Serial No. 597,004

26 Claims. (Cl. 46—40)

This invention relates to sound producing devices, and more particularly to a manually operated articulative sound producing device.

Sound producing devices have been used in combination with dolls in order to simulate talking or crying by the doll. Such devices as ordinarily made are quite cumbersome and must be built into the doll body while the doll is being constructed. One of the primary objects of the present invention resides in the provision of sound producing mechanism which is relatively elongated and of relatively small diameter, thereby adapting the same to be inserted into the doll body through a small opening in the same after the body has been completed. To help produce the desired compactness, the mechanism preferably includes the sound producing, modulating, and resonating elements, but does not include the necessary bellows or air chamber for operating the sound producing mechanism. In accordance with further objects of my invention, the body of the doll may itself be used as an enclosed air chamber or, if preferred, a special limited portion of the body of the doll may be so employed.

Further features and objects of the present invention are to provide, if desired, a special air chamber for use in combination with the sound producing mechanism already referred to, and, when such a special air chamber is used, to so relate the air chamber and sound producing mechanism that the air chamber, which is relatively large, may be built in place within the doll during the construction of the doll, while the mechanism may subsequently be inserted into the doll or/and the air chamber after the body of the doll has been completed.

Further objects of the present invention are to provide the necessary compression of the air chamber by manual pressure upon a part of the body of the doll, preferably the stomach wall thereof; to construct a doll body which, for the most part, is relatively rigid and self-supporting in configuration, and yet which will have a stomach portion which is readily yieldable in a natural and life-like manner; and to provide the necessary opening for insertion of the voice mechanism at the navel of the doll, thereby avoiding disfiguration of the torso.

Further objects of the present invention are to so arrange the valve or modulating mechanism of the sound producing device that the sound will be caused to flow within the same and to finally seek its outlet at the aforesaid opening in the doll body, thereby dispensing with the necessity of additional sound discharge openings; to make it possible when manually operating the voice to bear directly on the exposed end of the mechanism without, however, obstructing or stopping up a sound discharge openings, which in turn reduces the possibility of injury to the body of the doll upon long continued operation; to secure the end of the sound producing mechanism to the wall of the doll at the aforesaid opening in a simple and convenient manner which will nevertheless provide a desired air-tight fit; and to provide means for insuring that the inner or foot end of the sound producing mechanism will be retained in proper position within the doll despite the fact that the entire mechanism has been inserted in the doll from the exterior thereof.

Further objects of the present invention center about particular applications of the voice mechanism, and in accordance with such objects the voice mechanism is made applicable to air-tight dolls and to dolls which are not wholly enclosed or air-tight, to dolls the body in each of which is made entirely from rubber, and to dolls which are made of rubber or similar yieldable material strengthened or lined with a stiff material such as metal, as well as to other toys different from dolls such, for example, as an ordinary spherical rubber play ball.

To the accomplishment of the foregoing and such other objects as may hereinafter appear, my invention consists in the sound producing mechanism and the elements thereof and their relation one to the other and to the doll or like toy associated therewith, as hereinafter are more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by a drawing, in which:

Fig. 1 is a section taken in elevation through a talking doll made of rubber and embodying features of my invention;

Fig. 2 is an enlarged section through the sound producing mechanism showing a later stage in the operation thereof;

Fig. 3 is a transverse section taken in the plane of the line 3—3 of Fig. 2;

Fig. 4 is a section taken in elevation through a metal lined doll; and

Fig. 5 is a section through a ball provided with sound producing mechanism in accordance with the present invention.

Referring to the drawing and particularly to Fig. 1 thereof, the complete sound producing device comprises a compressible air chamber generally designated A, and sound producing and

controlling mechanism generally designated M. The mechanism M is generally tubular and is preferably made relatively elongated and of small diameter so that it may be inserted through a hole 12 in air chamber A after the air chamber has been completed and despite the fact that it is fully enclosed and air-tight except for the opening 12. The air chamber A, as illustrated in Fig. 1, is made up of a dome or bell-shaped housing 14 the open and preferably flanged edge 16 of which is secured to the front wall 18 of a doll. However, it will be readily appreciated that the entire doll body may be used as the air chamber A if the body is made air-tight, particularly at the arm and leg sockets. It will also be readily apparent that with sound producing mechanism of the type here disclosed, the air chamber may, if desired, consist simply of a spherical rubber ball such as is shown in Fig. 5, and furthermore such a ball or other fully enclosed air chamber may be used within the doll body instead of making the wall of the body a part of the air chamber.

Reverting now to Fig. 1, the doll body is made of rubber and comprises a front wall 18 and a rear wall 20, which are secured together along a parting line 22. The walls 18 and 20 are relatively thick in order to make the body fairly stiff and capable of retaining its initial and desired configuration. A part of the body, preferably the stomach wall, is made relatively thin, as shown at 24, in order to increase the flexibility thereof. The opening 12 is provided in the yieldable stomach wall 24 and is preferably located at the navel. The air chamber A is completed by the bell-shaped housing 14 which is itself preferably made of rubber, the flanged edge 16 being cemented to the front wall 18 of the doll around the flexible stomach portion 24. This operation may be performed during the construction of the doll and prior to cementing the front and back halves 18 and 20 together. This, it should be observed, is one of the important advantages of the present voice or sound producing mechanism, for even when a special air chamber is provided, which chamber is necessarily large, the air chamber is completely and readily separable from the mechanism M and consequently may be constructed and mounted within the doll body in any desired manner, the operative parts of the voice mechanism being subsequently inserted in the doll body and in the air chamber from the outside thereof.

The mechanism M comprises telescoping tubes 30 and 32 having sound producing mechanism 34, air inlet openings 36, and air discharge openings 38. Sound producing mechanism 34 may consist of a reed of conventional type vibratable over a channel member 40, the reed and channel member being mounted in a plug 42 which fills tube 30 and consequently forces the air entering inlet 36 to pass through the open end 44 of channel 40 and thus sets the reed 34 into vibration. Air inlets 36 may be located anywhere in back of the sound producing device 34, and are preferably and most simply formed by slotting the open end of tube 30, as is clearly shown in the drawing.

The sound discharge openings 38 are preferably arranged in a row around the periphery of and near the end of tube 32, the end of tube 32 being preferably closed, as is indicated at 60. Tube 32 may be constricted to form a relatively narrow and deep channel 62 located just inside of sound discharge openings 38. The hole 12 punched through rubber wall 24 is preferably made very small in diameter, the elasticity of the rubber being taken advantage of to permit forcing the mechanism in through the tiny hole. With this construction the tension of the rubber in groove 62 automatically provides an air seal of ample tightness, and at the same time the outer or head end of the mechanism is securely anchored or attached to the wall 24 at the opening 12. It is evident that the voice may be operated by pressing directly on the end 60, and the unusual location of the sound discharge openings 38 prevents the same from being stopped up or obstructed by such pressure on the closed end 60 of the voice mechanism.

The sound produced by reed 34 is preferably modulated so that a word such as "mama" will be articulated. For this purpose tube 30 is provided with an orifice disc 46 having a constricted opening 48 therein. The wall of tube 30 is cut away or slotted on either side of disc 46, forming the slots or openings 50 and 52.

The outer tube 32 is substantially larger in diameter than the inner tube 30 and is constricted to form the annular bearing surfaces 54 and 56 which are slidable on inner tube 30. In the extended position shown in Fig. 1, the slots 50 or/and 52 are closed by the annular bearing surface 54. Pressure upon and inward movement of either the wall 24 or the metallic button 60 cause a flow of air through inlet 36 and channel 40 with reed 34, and the sound produced is forced to flow through constricted opening 48 in orifice disc 46. This produces a sound equivalent to the consonant "m". The sound is carried through and amplified by tube 32, and finally flows out of sound discharge openings 38. After a slight inward movement of tube 32, the first annular bearing surface 54 leaves slots 50 and 52, thereby exposing the same for free sound passage, as is clearly illustrated in Fig. 2. Referring to that figure, it will be seen that the compressed air flows through inlets 36 and channel 40 with reed 34, and that the sound produced thereby is no longer forced to pass through constricted opening 48 because it may much more readily flow out of the peripheral slots 50. These slots, as well as the adjacent slots 52, are made as large as is conveniently possible, nearly all of the peripheral wall being cut away, as is most clearly shown in Fig. 3 of the drawing. By reason of the return slots 52, the sound is immediately permitted to reenter the inner tube and to flow freely through the same and then through outer tube 32 and finally out of the sound discharge openings 38. This unobstructed discharge results in a sound equivalent to the vowel sound "ah".

It will be evident from an inspection of Fig. 2 that further movement of outer tube 32 on inner tube 30 brings the second bearing surface 56 over slots 52 or/and slots 50 and again prevents free discharge of sound and forces the same through the constricted opening 48, with the repeated production of the nasal sound of consonant "m". Upon continued movement of outer tube 32, the bearing surface 56 leaves slots 50 and again opens the same for free discharge of sound, thereby again producing the vowel sound "ah". In this case the sound may travel directly through the outer tube 32 as well as through slots 52 and the inner tube 30. This second vowel sound, of course, is protracted as long as the inward movement of the voice mechanism is continued.

When the pressure on the voice mechanism is released, the rubber wall 24, because of its own

inherent resiliency, returns to its initial position or starting position. During this return movement the voice mechanism may either be silent or may produce sound, depending upon the design and construction of the reed mechanism 34, 40. The desired return movement may be aided slightly by the provision of compression spring 63 bearing at one end upon the closed end 60 of outer tube 32, and bearing at the other end upon orifice disc 46. In fact, spring 63 may be made sufficiently strong to provide the entire restoring impulse for the voice mechanism. Such, however, is not its primary function, and as here designed the true function of spring 63 is merely to keep the telescopically related tubes 30 and 32 in extended relation when wall 24 returns to its starting position, in order that the foot or inner end of tube 30 may retain its location in cup-shaped recess 64. This recess is molded in housing 14 at a point opposite the opening 12, in order to receive the inner end of the voice mechanism. Of course, if the entire body of the doll is used as an air chamber, a similar recess may be molded directly on the back wall 20 of the doll.

A modified form of doll is shown in Fig. 4, and referring to this figure the doll body comprises a front wall 118 and a rear wall 120, both made of rubber and, if made in two halves, cemented together along a parting line located at or near the line 122, just as has already been described in connection with Fig. 1. In the present case, however, the rubber walls are all of uniform thickness and relatively thin in order to provide the desired flexibility. The body is, for the most part, reinforced by a stiff preferably metallic lining which also may comprise a front portion 118' and a rear portion 120' secured together along parting line 122. Front wall 118' is cut away entirely around the stomach portion 124 of the doll, as is indicated at 126. The air chamber A may be made up of the flexible stomach wall 124 and a metallic dome or bell-shaped housing 114 the flanged edge 116 of which is secured to metallic lining 118' as by welding. No leakage takes place between the rubber wall 118 and the metallic lining 118' because the rubber is expanded over and fits tightly against the metal. Metallic housing 114 may be provided with a cup-shaped recess 164 for receiving the inner or foot end of the sound producing mechanism M. Front wall 124 may be provided with a hole 112 corresponding to the hole 12 in Fig. 1. The sound producing mechanism M corresponds precisely to that already described. It will be evident that housing 114 may be welded to lining 118' during the construction of the body of the doll, and that after the body of the doll has been completely assembled, voice mechanism M may be inserted through the opening 112 and pushed home into desired location. It will then operate exactly as has already been described.

When the doll body is made of flexible rubber supported by a stiffening lining, as has been explained in connection with Fig. 4, the air chamber A may be modified to more nearly resemble that described in connection with Fig. 1. Specifically, the bell-shaped housing 114, instead of being made of metal, may be made of rubber and the open edge of the rubber housing may be cemented directly to the exposed or resilient rubber stomach wall 124 just inside of the cut-away edge 126 of the metal lining. With this arrangement the air chamber is made entirely of rubber and the necessary joint between the housing 114 and the front of the doll is obtained by cementing rubber to rubber instead of by welding metal to metal.

While the voice mechanism has been described as used in combination with a doll, it may also be used in toys of other kinds, and this fact is here exemplified by showing the adaptability of the voice mechanism for use in combination with a simple spherical rubber ball. Thus, referring to Fig. 5, the air chamber A consists of a generally spherical rubber ball 200 the surface of which is provided with an opening 212 and the opposite inside wall of which is provided with a cup-shaped recess 264. After the ball has been completely manufactured, either integrally or in halves cemented together, the voice mechanism M may be inserted through opening 212 and pushed home until the inner or foot end is seated in recess 264, while the groove 62 is received by opening 212. If desired, the outer surface of the ball may be recessed slightly at the point 270, so that the exposed end 60 of the voice mechanism will be flush with the spherical surface of the ball in order not to interfere with free rolling of the ball on the ground or floor. This ball possesses great amusement value and may be used in a variety of ways. For example, it may be used to play "throw and catch," in which case the surprised recipient of the ball when first catching the same will hear it speak. The ball may be carried concealed in one's pocket and secretly squeezed to produce amusing sounds from a hidden source. Children find increased pleasure in playing with a ball equipped as here shown, because of the frequent noises produced by either accidental or intentional squeezing of the ball while playing with the same.

It is believed that the mode of constructing and using the voice mechanism of the present invention and of applying the same to dolls and other toys, as well as the many advantages thereof, will for the most part be apparent from the foregoing detailed description. The mechanical parts of the sound producing mechanism are generally in the form of an elongated tube of small diameter, which is insertable into a doll or other toy from the outside of the completed toy and through a relatively tiny hole left in the body of the toy. The entire body of the toy may be used as an air chamber for the sound producing mechanism, or a portion of the toy may be so employed, or a special sound chamber may be provided. In any case, large parts such as are needed for the sound chamber may be built and mounted in place within the toy during the construction of the toy, while the mechanical parts of the sound producing device may subsequently be inserted in the toy after the latter has been substantially completed. When used with a doll, the doll body is preferably made resilient, and in order to increase the realism of the toy this yieldability of the body is preferably located at the stomach of the doll, while the projecting end of the voice mechanism is located at the navel. The sound is guided entirely through the preferably telescopic arrangement of tubes, and is finally discharged through openings formed at the exposed end of the tube. This dispenses with the necessity for special sound discharge openings in the body of the doll. At the same time, the openings provided as aforesaid are so located that they are not obstructed or stopped up when pressure is applied directly on the exposed end of the sound producing mechanism. The inner or foot end of the mechanism is supported and held in desired location despite the fact that it is inserted

from the outside of the doll. The doll itself may be constructed in a variety of ways, as, for example, rubber having relatively thick and non-yieldable portions and relatively thin and yieldable portions, or rubber reinforced with stiff metallic lining so distributed as to permit desired portions of the doll to yield under pressure, and the entire doll body may be used as an air chamber, or a special air chamber may be provided. The mechanism may with equal facility be inserted into a toy different from a doll, as, for example, a rubber ball.

It will be understood by those skilled in the art that many features of the present invention, particularly the valve mechanism for modulating the sound, are valuable regardless of whether the voice is operated manually, as here shown, or by gravitational means such as are already known in the art. It will also be apparent that many features of the invention, such, for example, as the small radial dimension of the voice mechanism, which makes possible insertion of the voice mechanism into the doll through a small opening after the doll has been completely manufactured, are valuable regardless of whether the voice is articulative or is a simple crier. It will also be understood that one syllable or three syllables may be produced instead of two syllables as here shown, by simply altering the outer tube to have one or three annular bearing surfaces, respectively, for blocking the slots in the inner tube. It will further be appreciated that by appropriate alteration of the orifice disc 46 in order to nearly or completely stop the same, the mechanism may be made to articulate the word "papa" instead of the word "mama". The arrangements shown in Figs. 1 and 4 may be combined so as to use a rubber dome or housing while using a metal lining in the doll, and as has already been mentioned, the dome or housing may be entirely omitted and the entire doll body used as an air chamber, or, in fact, any other enclosed body, such as a rubber ball.

It will therefore be apparent that while I have shown and described my invention in preferred forms, many changes and modifications may be made in the structures disclosed, without departing from the spirit of the invention, defined in the following claims.

I claim:

1. Articulative sound producing mechanism comprising a pair of telescoping tubes having a sound producing reed, air inlet openings and sound discharge openings, the inside tube having an orifice disc with a constricted opening, and relatively large sound discharge slots at the side of said disc, the outer tube being substantially larger in diameter than the inner tube and being constricted to form an annular bearing surface slidable on the inner tube, whereby the sound producing mechanism will produce a consonant or vowel sound according as the slots are covered or uncovered by the outer tube, the sound being guided through the aforesaid tubes.

2. Articulative sound producing mechanism comprising a pair of telescoping tubes having a sound producing reed, air inlet openings, and sound discharge openings, the inner tube having an orifice disc with a constricted opening, and relatively large sound discharge slots at either side of said disc, the outer of said tubes being substantially larger in diameter than the inner tube and being constricted to form a spaced pair of annular bearing surfaces slidable on the inner tube, whereby the sound producing mechanism will produce a consonant or vowel sound according as the slots are covered or uncovered by the outer tube, the sound being guided through the aforesaid tubes to the sound discharge openings.

3. Articulative sound producing mechanism comprising a pair of telescoping tubes, the smaller of said tubes having a sound producing reed intermediate its length, air inlet openings at one side of the reed, an orifice disc with a constricted opening at the opposite side of said reed, and relatively large sound discharge slots at the side of said disc, the outer of said tubes being substantially larger in diameter than the inner tube and being constricted to form an annular bearing surface slidable on the inner tube.

4. Articulative sound producing mechanism comprising a pair of elongated telescoping tubes, the smaller of said tubes having a sound producing reed intermediate its length, air inlet openings at one side of the reed, an orifice disc with a constricted opening at the opposite side of said reed, and relatively large sound discharge slots at either side of said disc, the outer of said tubes being substantially larger in diameter than the inner tube and being constricted to form a spaced pair of annular bearing surfaces slidable on the inner tube, whereby the sound producing mechanism will produce a consonant or vowel sound according as the slots are covered or uncovered by the bearing surfaces of the outer tube, and in every case the sound is guided into and through the aforesaid tubes.

5. Articulative sound producing mechanism comprising a pair of elongated telescoping tubes, the smaller of said tubes having a sound producing reed, air inlet openings at one side of said reed, an orifice disc with a constricted opening at the opposite side of said reed, and relatively large sound discharge slots at the side of said disc, the outer of said tubes being substantially larger in diameter than the inner tube and being constricted near one end to form an annular bearing surface slidable on the inner tube, and the opposite end of said outer tube being provided with an annular groove for mating with a hole in the wall of an air chamber, the end of said tube protruding from the wall being provided with sound discharge openings.

6. Articulative sound producing mechanism comprising a pair of elongated telescoping tubes, the smaller of said tubes having a sound producing reed, air inlet openings at one side of said reed, an orifice disc with a constricted opening at the opposite side of said reed, and relatively large sound discharge slots at either side of said disc, the outer of said tubes being substantially larger in diameter than the inner tube and being constricted near one end to form a spaced pair of annular bearing surfaces slidable on the inner tube, and the opposite end of said outer tube being provided with an annular groove for mating with a hole in the wall of an air chamber, the end of said tube protruding from the wall being provided with a peripheral ring of sound discharge openings and a closed end surface.

7. A manually operable mechanism for use with an air chamber to form articulative sound producing apparatus, said mechanism being elongated, tubular, and of small diameter, and thereby adapted to be forced from the outside into an air chamber through a small opening in the air chamber after completion of the same, said mechanism including a vibratile sound producing reed and additional valve mechanism for modulating the sound produced thereby.

8. An articulative sound producing mechanism comprising elongated telescopically related tubes of small diameter, said tubes by reason of their small diameter being thereby adapted to be forced from the outside into an air chamber through a small opening in the air chamber after completion of the same, said tubes being provided with a sound producing reed and appropriate valve passages which are relatively movable upon relative telescopic movement of the tubes for modulating the sound produced by the reed and for guiding the same through the tubes.

9. A sound producing device comprising an enclosed air chamber having a small hole in one wall thereof, and sound producing mechanism in the form of telescopically related tubes of relatively small diameter, permitting the said mechanism to be inserted into the air chamber through the aforesaid hole, the inner end of the mechanism being open and resting against the opposite wall of the chamber, and the outer end of the mechanism being secured to the wall at the aforesaid opening, said mechanism including a vibratile reed.

10. A sound producing device comprising an enclosed air chamber having a small hole in one wall and a cup-shaped recess on the inside of another wall opposite the aforesaid hole, and sound producing mechanism in the form of telescopically related elongated tubes of relatively small diameter, permitting the said mechanism to be inserted into the air chamber through the aforesaid hole, the foot end of the mechanism being received by the aforesaid recess, the head end of the mechanism being secured to the air chamber wall at the aforesaid opening, a vibratile reed in said mechanism, and resilient means tending to extend said mechanism.

11. A sound producing device comprising an air chamber provided with a small opening, and sound producing mechanism including elongated telescopically related tubes of small diameter, the head end of the tube system being secured to the air chamber at the aforesaid opening and being provided with sound discharge holes, and the tubes being provided with a sound producing reed and appropriate valve passages which are relatively movable upon relative telescopic movement of the tubes for modulating the sound produced by the reed and for guiding the same through the tubes.

12. A sound producing device comprising an air chamber, a vibratile sound producing reed, and valve mechanism for modulating the sound produced, said valve mechanism being separable from the air chamber, the air chamber being adapted to be secured within a doll body during the construction of the doll body, and the valve mechanism being elongated and of small diameter and thereby adapted to be forced from the outside through an opening into the air chamber after completion of the doll body.

13. A sound producing device comprising an air chamber, a vibratile sound producing reed, and valve mechanism for modulating the sound produced, said valve mechanism being separable from the air chamber, the air chamber being generally in the form of an open-ended housing the open end of which is adapted to be secured to the inner wall of a doll body, and the valve mechanism including elongated telescopically related tubes of small diameter adapted to be forced from the outside into the air chamber through an opening in the doll body.

14. An articulative sound producing device comprising an air chamber, and valve mechanism separable therefrom, the air chamber being adapted to be secured inside of a doll body during construction of the doll body, and the valve mechanism including elongated telescopically related tubes of small diameter adapted to be forced from the outside through an opening into the air chamber after completion of the doll body, the said tubes being provided with a sound producing reed and appropriate valve passages which are relatively movable upon relative telescopic movement of the tubes for modulating the sound produced by the reed.

15. An articulative sound producing device comprising an air chamber, and valve mechanism separable therefrom, the air chamber being generally in the form of a bell-shaped housing the open end of which is adapted to be secured to the inner wall of a doll body during the construction of the doll, and the closed end of which is provided with a cup-shaped recess, said valve mechanism including elongated telescoping tubes of small diameter adapted to be forced from the outside into the air chamber through a small opening in the doll body, the foot end of the valve mechanism being dimensioned to be received by the recess in the air chamber, the head end of the valve mechanism being designed to be secured to the doll body at the aforesaid opening and being provided with sound discharge holes, and the tubes being provided with a sound producing reed and appropriate mating passages for modulating the sound produced by the reed.

16. A doll comprising a doll body at least a portion of which is air-tight, said body including a flexible wall portion provided with a hole, and articulative sound producing mechanism of relatively small diameter extending into the doll through the aforesaid hole, said mechanism including a vibratile sound producing reed and an appropriate valve system for modulating the produced sound.

17. A doll comprising a doll body at least a portion of which is air-tight, said body including a flexible stomach wall provided with a hole, and articulative sound producing mechanism in the form of telescopically related elongated tubes of relatively small diameter, said mechanism extending into the doll through the aforesaid hole, and including a vibratile sound producing reed and an appropriate valve system for modulating the produced sound.

18. A doll comprising a doll body at least a portion of which is air-tight, said body including a flexible stomach wall provided with a small hole located at the navel, a cup-shaped recess in the body opposite the hole, and an articulative sound producing mechanism in the form of telescoping elongated tubes of relatively small diameter, said mechanism extending into the doll through the aforesaid hole, the inner end of the mechanism being received by the aforesaid recess, and the outer end of the mechanism being secured to the body wall at the aforesaid hole and acting as sound discharge means, said mechanism including means responsive to the passage of air through said tubes to produce an audible sound.

19. A talking doll comprising a doll body a portion of which is flexible and provided with an opening, an air chamber secured to the flexible wall of the doll, a vibratile sound producing reed, and valve mechanism for modulating the produced sound including elongated telescopically related tubes of small diameter, the head end of the valve mechanism being secured to the

body at the aforesaid opening and being provided with sound discharge holes.

20. A talking doll comprising a doll body a portion of which is flexible and provided with a small opening, an air chamber the open end of which is secured to the flexible wall of the doll, and valve mechanism including elongated telescopically related tubes of small diameter, the head end of the valve mechanism being secured to the doll body at the aforesaid opening and being provided with sound discharge holes, and the tubes being provided with a sound producing reed and appropriate valve passages which are relatively movable upon relative telescopic movement of the tubes for modulating the sound produced by the reed and for guiding the same through the tubes.

21. A talking doll comprising a doll body a portion of which is flexible and provided with a small opening, an air chamber the open end of which is secured to the flexible wall of the doll, and the opposite end of which is provided with a cup-shaped recess, and valve mechanism including elongated telescoping tubes of small diameter, the foot end of the valve mechanism being received by the aforesaid recess, the head end of the valve mechanism being secured to the body at the aforesaid opening, a vibratile reed in said mechanism, and the tubes being provided with resilient means tending to extend the same in order to keep the foot end in the aforesaid recess.

22. A talking doll comprising a doll body the stomach portion of which is flexible and provided with a small opening at the navel, an air chamber in the form of a bell-shaped housing the open end of which is secured to the front wall of the doll around the aforesaid flexible portion, and the opposite end of which is provided with a cup-shaped recess facing the navel opening, and valve mechanism including elongated telescoping tubes of small diameter, the foot end of the valve mechanism being received by the aforesaid recess, the head end of the valve mechanism being secured to the doll body at the aforesaid opening and being provided with sound discharge holes, and the said tubes being provided with a sound producing reed, appropriate mating passages for modulating the sound produced by the reed and for guiding the same through the tubes, and a compression spring within the tubes tending to extend the same in order to keep the foot end in the aforesaid recess.

23. A talking doll having a body made of rubber, the walls of said body being relatively thick and non-yieldable, but the stomach wall of said body being relatively thin and flexible and provided with an opening, and elongated articulative sound producing mechanism of small diameter adapted to be inserted into the body of the doll through the opening, said mechanism including a vibratile sound-producing reed and an appropriate valve system for modulating the produced sound.

24. A talking doll having a body made of rubber, the walls of said body being relatively thick and non-yieldable, but the stomach wall of said body being relatively thin and flexible and provided with an opening at the navel, articulative voice mechanism in the form of elongated telescoping small-diameter tubes adapted to be inserted into the body of the doll through the navel opening, and a bell-shaped air chamber the open side of which is secured to the front wall of the doll body around the aforesaid flexible stomach portion, said mechanism including a vibratile sound producing reed and an appropriate valve system for modulating the produced sound.

25. A talking doll comprising a doll body made of flexible material lined with stiff material to make the same rigid, said stiff lining being cut away at the stomach portion so as to make the same flexible, and said stomach wall being provided with an opening at the navel, and elongated articulative sound producing mechanism of relatively small diameter adapted to be inserted into the doll body through the opening, said mechanism including a vibratile sound producing reed and an appropriate valve system for modulating the produced sound.

26. A talking doll comprising a doll body made of flexible rubber lined with metal to make the same rigid, the metal lining being cut away at the stomach portion so as to make the same flexible, and said stomach wall being provided with an opening at the navel, articulative voice mechanism in the form of elongated telescoping tubes of relatively small diameter adapted to be inserted into the doll body through the navel opening, and a bell-shaped air chamber the open end of which is secured to the front wall of the doll body, said mechanism including a vibratile sound producing reed and an appropriate valve system for modulating the produced sound.

LEO J. GRUBMAN.