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(54) IMPROVEMENTS IN OR RELATING TO DOLLS

(71) We, AGENCE NATIONALE DE VALORISATION DE LA RECHERCHE (ANVAR), a Public Establishment, of 13, rue Madeleine Michelis, 92200 Neuilly sur Seine, France, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to dolls, wherein is mounted an animating device controlling, operating or actuating motions and/or deformations of said doll. The term "doll" is intended to include manikins configured to represent human beings or real or imaginary animals and such dolls will be referred to as being of "the aforementioned type".

More precisely the doll comprises a movable body or member such as a swinging weight adapted to move inside the body when the latter is displaced or its attitude or orientation is changed, the motions of said movable body or member being transmitted through levers, cables or other mechanical, magnetic or electrical connecting means for operating the performance of said motions and/or deformations.

An animated doll of such a kind has been disclosed in particular in U.S. Patent No. 3,481,070 issued to the inventor on December 2, 1969.

According to the invention there is provided a doll of the aforementioned type having mounted therein animating means for controlling its functions, said means comprising a weight attached to an elongate element slidably and rotatably mounted in a swivel bearing, whereby the elongate element is displaced when the orientation of the doll is changed and said displacement actuates connecting means controlling said functions of the doll.

Very large and variable reduction ratios can thus be achieved for the various control means for animating said doll. The variations are obtained in a continuous and gradual fashion. The motions and deformations produced may be of a large extent or reduced as the case may be and the forces

may be great or small according to the manner in which the device is moved.

With such a design one may effectively obtain through the actuating power of a single weight very diversified, precise and gradual random motions enabling the device to simulate life.

Preferably, the doll comprises two substantially enclosed casings into which project the respective ends of the elongate element, the swivel bearing for said element being located intermediate the interiors of said casings. For instance, the first casing may be housed within a body portion of said doll whereas the second casing is mounted within a head portion and a ball-and-socket like joint or swivel bearing is provided substantially at the level of the neck. Both casing are desirably stiff and not deformable and the body of the doll may be moulded from a flexible or yielding deformable material cast over these casings. The second casing may form the skull pivotally mounted on the trunk of the doll.

It is thus possible to provide a doll of which not only the organs and like parts or components are animated but also the skin and in particular that of the face is deformable and thereby able to show human expressions such as smiling, laughter, weeping, sleeping, fright, astonishment, and so on.

According to a further preferred feature of the invention, the aforementioned casings are held together or kept assembled in spaced relationship by the envelope of the body of the doll which is moulded from a flexible material cast or moulded thereover. Such a construction facilitates the assembly of the casings, makes the doll mechanically stronger while giving it some flexibility at or about the level of the neck and increases the capabilities of expression of the doll by making it sensitive to a relative movement of the head with respect to the trunk, for instance when raising the doll from the lying or recumbent position to the sitting position by lifting its head in the manner used for normally handling a baby.

Moreover, the mechanisms actuated by the elongate element can be arranged to react

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upon each other, allowing a sequence of chain reactions to be set up which is unforeseeable in its details but is predictable on the whole however—as would be the case of a living being reacting in some general manner (which however is not foreseeable in a detailed fashion) to an external stimulus or action.

The invention will now be described, by way of examples only, with reference to the accompanying drawings illustrating two forms of embodiment of the invention as applied to a doll featuring a new-born child. In the accompanying drawings:

Figs. 1 and 2 show the same doll partly sectioned in slightly different operating positions;

Fig. 3 is a sectional view of a doll made according to an alternative embodiment of the invention;

Fig. 4 is a more detailed view showing the control mechanism for actuating the eyes of the doll illustrated in Fig. 3; and

Fig. 5 is a sectional fragmentary view showing an anatomical detail.

In the embodiment shown in Figs. 1 and 2 a doll representing a new-born child comprises a body 10 moulded from a flexible deformable material moulded over two rigid casings 11 and 12 respectively, casing 11 of which is mounted within the trunk of the doll and the other casing 12 forming a skull mounted within the head. These casings may be made from any suitable material, desirably from plastics or like synthetic material of sufficient rigidity. The casing 12 is pivotally mounted like a swivel or ball-and-socket joint with its base 12a rotatable within a bearing or socket portion 13 formed at the upper portion of the casing 11. The casing 11 is of substantially frusto-conical configuration having at its top an opening forming a neck 14 of a reduced diameter in which a swivel bearing or ball-and-socket like joint is mounted, a bearing element 16 being rotatable in a bushing 15.

In the casing 11 is mounted a swinging mass or counterweight 17 made for instance from steel or lead which is secured to the end of a lever 18 which may consist for instance of a steel rod. The counterweight 17 has a collar or ring 19 made from rubber or the like and which will damp or absorb the shock of the counterweight hitting the casing 11.

The rod 18 is mounted within the ball joint 16 so as to be freely rotatable and freely slidable and its end remote from the counterweight 17 projects into the casing 12 forming the skull.

The different pivotally-connected organs or members of the doll such as the hands 20, the eyes 21, the lower jaw 22, etc. . . . , are actuated by operating mechanisms having sheathed cables, links and levers, etc. . . . , appropriately connected to the rod 18.

Thus for instance a sheathed cable 23 enables the hand 20 to be actuated. The cable 23 is accommodated within the body of the doll (it has been shown externally to facilitate the illustration). One end 24 of the cable which extends out of the sheath is secured to a ring or collar 25 which is slipped over the rod 18 on which it may freely rotate and slide. The other end 26 of the cable extends down to the fingers of the hand. When the end 24 of the cable is pulled as shown in Fig. 2, the fingers of the hand are operated so as to clench the fist, the closing action being powerful since it is multiplied by the length of the lever arm, the cable end 24 being secured near the point of pivotal connection of the ball joint 16. The cable 23 is of course provided for each hand of the doll.

In the exemplary embodiment illustrated, the actuation of the mouth and more specifically of the lower jaw 22 is obtained by the motion of a lever 30 pivotally connected at 31 in the jaw and resting within an orifice 32 forming a bearing in the stiff skull 12. The other end 33 of the lever includes a hole 34 through which passes a short cord 35; one end 36 of the cord is secured to a ring-shaped collar 37 which is slidable on the rod 18 and on the other end is a ball 38 large enough to retain the cord within the hole 34. A guide pulley 39 for the cord 35 is fastened to the skull.

According to the position of the counterweight 17, i.e. of the lever 18 within the body of the doll, the lever 30 is either pulled downwards (Fig. 1) operating the mouth in the closing direction or is released leaving the mouth in the normal half-open as-moulded position. In Fig. 2, the lever 30 is not being actuated by the cord 35 but the mouth is still closed since the skull 12 has been tipped forward on the casing 11 in the direction of the arrow F, the compression of the moulding forcing the mouth shut.

In the example shown in the drawings, the movement of the eyes is obtained by means of a lever consisting of two parts 40, 41 sliding or telescoping within each other and which extends through a ball-and-socket joint 42. The joint is secured to a bar 43 to which each of the eyes is fastened through rearwards projections 44 integral with the respective eye-balls. The lever 40, 41 slides within a ball-and-socket joint 45 which consists of a magnetic ball element which tends normally to be retained in a cradle or socket 46, also magnetic, of a member 47 mounted endwise of the rod 18.

At the bottom of the casing 11 there is a bellows 50 which is normally biased towards its extended position by an inner spring (not shown) or by any other equivalent means. On this bellows there is provided a number of protrusions 51 which,

when they are squeezed or squashed by the counter-weight 17, produce various sounds simulating an infant crying or wailing.

A porous tongue 53 is mounted within the mouth 54 and communicates with a duct 55 at one end of a cavity 56 formed on the abdomen between the front wall of the casing 11 and the moulded body of the doll. The lower portion of the cavity 56 communicates with a urethra-like duct 57. A ball 58 is freely mounted within the cavity 56. In the lower position as shown in Figure 2 at 58¹, the ball closes or seals off the duct 57.

The animation of the doll may be easily inferred from the previous description. It is plain that according to the tilt imparted to the doll, the counterweight 17 assumes various positions within the casing 11 and that according to these positions various motions of various amplitudes and forces are transmitted to the different organs of the doll. At the same time various sounds are emitted by the bellows mechanism 50, 51. In some positions the motions may have great force. Thus if the doll is rocked very powerful closing motions are transmitted to the hands and the doll will cling to or grip the person who is bearing it. When it is rocked or dandled, the doll will move its lips and the alternating opening and closing motion of the mouth will allow sucking or feeding.

Some positions permit urination and some others will result in the appearance of sleep with gradual closing of the eyes. All the movements are attended by various sounds such as are emitted for instance by newborn children.

In a further embodiment shown in Figs. 3 to 5 wherein the same reference numerals increased by one hundred units are used to denote the same items of the animated doll as those illustrated by Figs. 1 and 2, a doll comprises a body defined by an envelope 110 moulded from deformable flexible material (for example rubber-like material) and moulded over rigid casings 111 and 112 respectively, casing 111 being mounted within the trunk of the doll whereas casing 112 forms a skull mounted within the head. As in Figs. 1 and 2 these casings may be made from any suitable material, desirably of plastics or synthetic material of a sufficiently rigid or stiff character. As seen in Fig. 3, both casings are held together or kept assembled in spaced relation to each other by the envelope 110 of the body of the doll moulded or cast over these two casings. The flexibility of the envelope provides some freedom of motion for the head with respect to the trunk.

At the bottom of the skull 112 is fitted an element 60 secured to said casing by any suitable means, such as screwing or welding for instance. Between the element 60 and

the bottom of the skull 112 is provided location for a socket 115 in which a ball member 116 is rotatable to give a pivotal connection between rod 118 and casings 111, 112. As in Figs. 1 and 2, rod 118 is mounted for free rotation and free sliding motion within the ball member 116 and projects at one end into the skull 112 while having at its other end a mass 117 forming a counterweight.

To damp or absorb impact or inertia loads due to the counterweight 117, there is provided in this embodiment a bore defined by two frusto-conical sections 61, 62 formed in the skull 112 and in the element 60 respectively, which limit the angular displacement of the rod 118.

In the present embodiment the actuation of the arms is provided by a mechanism comprising a ball 63 slidably mounted on the rod 118 and having two housings 64, 65 for accommodating ball-and-socket joints 66, 67 provided at the ends of the two curved rockers or like swinging members 68, 69 freely extending within the orifices 70, formed in the wall of the envelope 110 of the doll. The other ends of the rockers carry respective counterweights 72, 73 located in the corresponding hollow arms 74, 75 of the doll. It should be noted that the orifices 70 are provided in the walls of the flexible envelope of the doll between both casings 111, 112, and strengthening pieces 76, may be provided at these locations.

The movement of the eyes (as can be seen more clearly in Fig. 4) is effected by a mechanism which comprises a swivel bearing or ball-and-socket joint 78 which slides freely on the reduced-diameter end portion 118a of the rod 118; the ball joint 78 is mounted in a balanced rocker lever 79 at each end of which are bores 80, 81 for the free sliding motions of rods 82, 83 connected to respective eyes 84, 84¹. Corresponding mechanisms are mounted on levers 82, 83, each comprising (as seen in Fig. 4 in relation to lever 83) an arm 85 of a fork 86, the other arm 87 of the fork being pivotally connected on the former and having one end forming an extension 87a secured for instance by a short string 88 to a stationary fastening point 89 on the skull. Both arms of the fork 86 extends into the eyelids 90, 91 of the doll which are made from the resiliently deformable material of the envelope 110 covering the doll.

For actuating the mouth and the chin, there is provided a generally L-shaped member 92 which is hooked into the chin 93 of the doll while extending straddlewise over the tongue 94. The upper portion of the member is attached at 92a to a cable 95 which, after having been reeved back and possibly geared down over sheaves 96, 97 secured within the skull, is anchored at 118b

at the end of reduced-diameter portion 118a.

The tongue 94 consists of a pear-shaped hollow bulb moulded for instance from rubber and which is housed within the buccal cavity 98 formed as a recess in the envelope 110 of the doll. This cavity is closed in sealing or fluid-tight relationship except for a hole 99 for the passage of the rear end 94a of the tongue which opens into a connecting pipe 200. This forms an ingestion tube and leads to a bladder-like pocket 201 provided at the bottom of the trunk of the doll. The buccal cavity 98 exhibits a lower cup-like portion 98a on which the tongue 94 rests. The latter has at its lower portion an orifice 94b, and registers with the hollow cup-like portion 98a of the buccal cavity. The mounting of the tongue is effected through the force fitting and resilient locking of the tail 94a of the tongue into the hole 99. Such a mounting is fluid-tight.

The bladder-like pocket 201 at the bottom of the doll is closed towards the top by a plug 202 which engages an opening in a hoop 203 which gives reinforcement at this level of the envelope 110. The remainder of the pocket is defined by the envelope 110 of the body of the doll. As seen in Fig. 3 the bladder-like pocket 201 communicates with the urethra 204.

At 150 is shown as in Figs. 1 and 2 the bellows which provides for the emission of sounds when it is squashed or squeezed by the counterweight 117. In the present mounting the bellows 150 is secured to the plug 202. The spring (not shown) which is mounted within the bellows 150 and which urges the bellows to extend is desirably calibrated so as to substantially counterbalance or offset the weight of the counterweight.

The assembly of the doll described hereinabove may be carried out very simply. It suffices for instance to slip over the rod 118 provided with the counterweight 117 the ball 63 for operating the arms and to mount the whole assembly within the lower casing 111 which has a bottom opening 211. Then the control mechanism for actuating the eyes and the chin is assembled within the skull 112 about the rod 118; and afterwards the skull is mounted on the body while properly positioning the ball joint 116 and its socket or bearing 115 between the casing 112 and the element 60. The connection of the tongue to the ingestion tube 200 is effected and then the yielding envelope of the body of the doll is moulded into position and effects assembly of both casings 111, 112, the legs, and the shoulders. Previously the plug 202 and the bellows 150 have been positioned within the envelope. Then the tongue is mounted within the buccal cavity. Afterwards the rockers 68, 69 for operating the arms are mounted together with their counterweights 72, 73 and then the forearms and the hands are affixed

for instance by means of simple resilient clips as shown.

All of the control mechanisms for actuating the various organs of the doll are operated by the counterweight 117 and as the control means are all reversible to some extent they react upon each other while providing an infinite number of possible variations.

The general attitudes of the doll are however essentially prescribed by its positioning.

Thus in the recumbent position, lying on its back, the baby has a tendency to sleep by closing the eyes, the eyelids being operated by the forks 86. The mouth relaxes.

If the baby is sitting, the eyes open, the mouth tends to close but may open. The eyes follow the person who is rocking or dandling it. The mouth sucks when the baby is being rocked, dandled or swung. When a feeding-bottle is inserted into the mouth, the liquid is automatically sucked or drawn by the tongue into the mouth cup and by the ingestion tube down to the bladder. In the standing position or in the forward recumbent position lying on the belly, the liquid contained within the bladder will flow out and exit through the urethra.

Grins and deformations of the face can be obtained in other positions. Sounds will be emitted as soon as the baby is moved, due to the bellows 150 (urged towards extension by its inner spring) being squeezed or squashed by the counterweight.

It is apparent that with such a construction and taking into account the interaction of the various mechanisms the doll can express a very large and almost unlimited number of human attitudes.

According to the detail modification illustrated by Fig. 5 in relation to a female sexed doll, the urethra communicating with the bladder 201 is reduced to a cut-out 206 made through the envelope 110 of the doll at the desired location in front of a smaller thickness portion of said envelope formed by moulding a lenticular hollow recess 207 into the inner face of the envelope at this location. In this manner, the pocket 201 will remain closed in sealing relationship except when the legs of the doll are spread apart, in which case, due to the inner moulding in the shape of a lenticular hollow recess 207 formed in the envelope, a substantially circular opening is obtained, enabling a jet of liquid to flow out when the bladder is full of liquid and when the doll is properly oriented.

It should be understood that the invention is not limited to the embodiments shown and described herein which have been given by way of example only; the invention also includes all the technical equivalents of the means described as well as their combinations, and may thus incorporate magnetic or

electrical means actuated by the movement of the elongate element, and/or pneumatic means driven by air compressed in the bellows by the mass on the end of said elongate element.

WHAT WE CLAIM IS:—

1. A doll of the aforementioned type having mounted therein animating means for controlling its functions, said means comprising a weight attached to an elongate element slidably and rotatably mounted in a swivel bearing, whereby the elongate element is displaced when the orientation of the doll is changed and said displacement actuates connecting means controlling said functions of the doll.

2. A doll according to claim 1, wherein the doll comprises two substantially enclosed casings into which project the respective ends of the elongate element, the swivel bearing for said element being located intermediate the interiors of said casings.

3. A doll according to claim 2, wherein the trunk of said doll comprises a first of said casings and the head comprises a second, said swivel bearing being located substantially at the level of the neck.

4. A doll according to claim 3, wherein said second casing is pivotally mounted on said first casing.

5. A doll according to claim 3 or claim 4, wherein the interior of said first casing comprises a substantially frusto-conical section.

6. A doll according to any one of claims 3 to 5, wherein said first and second casings are substantially rigid and not deformable.

7. A doll according to claim 6, wherein a jaw portion is movably relative to said second casing.

8. A doll according to any one of claims 2 to 7, wherein a deformable flexible material is moulded over said casings to form the body of said doll.

9. A doll according to any one of claims 2 to 8, wherein the casings are held together in spaced relation to each other by the envelope of the body of said doll which is moulded from a flexible material moulded or cast thereover.

10. A doll according to any one of claims 5 to 9, wherein said swivel bearing is located at the end of said frusto-conical section of casing interior which has least cross-sectioned area.

11. A doll according to any one of claims 1 to 9, wherein said swivel bearing is mounted between members which have frusto-conical bores coaxially aligned and opposed so as to provide for and limit the angular motion of said elongate element.

12. A doll according to claim 11 when dependent to any of claims 3 to 9, wherein one of said members consist of the bottom

of the head and the other of an insert secured underneath the head.

13. A doll according to any one of claims 2 to 12, wherein said weight is attached at one end of the elongate element and the majority of the connecting means controlling the function of the doll or actuated by that portion of the element projecting into the casing remote from the weight.

14. A doll according to any one of claims 2 to 13, wherein at least one collar is slidably mounted on said elongate element, and the connecting means controlling the functions of the doll comprise cables attached to and actuated by the movement of the collar or collars.

15. A doll according to any one of claims 3 to 14, wherein a sliding member is mounted on said elongate element within the trunk casing, said sliding member comprising two sockets for accommodating respective ball joints provided at free ends of a pair of curved rockers which extend freely through orifices formed in the envelope of the body of said doll, the other ends thereof carrying counterweights which engage the respective hollow arms of said doll.

16. A doll according to any one of claims 3 to 15, wherein the movements of the eyes are produced by a mechanism which comprises a ball-and-socket joint freely slidable on said elongate element, a rocker arm pivotally connected to said ball-and-socket joint and a pair of rods slidable at each end of said arm and connected to the respective eyes.

17. A doll according to claim 16, wherein on each rod connecting the rocker arm to its respective eye is mounted a fork, the arms of which engage upper and lower eyelids of said eye made from the resiliently deformable lining material covering the doll, one of said arms being pivotally connected to the other and to the skull whereby the arms can effect relative closing and opening movements with movement of the elongate element.

18. A doll according to any one of claims 3 to 17, wherein at the free end of the elongate element is fastened a cable which is led over at least one guide sheave and is connected at its other end to a cranked element embedded in the chin of said doll, whereby movement of said elongate element effects movement of said chin.

19. A doll according to any one of claims 3 to 18, wherein the doll has a tongue which comprises a hollow bulb-shaped moulding made from a resilient material and having a hole in its lower wall for the emission of fluid, the tongue being housed in a buccal cavity formed in the doll.

20. A doll according to any one of

electrical means actuated by the movement of the elongate element, and/or pneumatic means driven by air compressed in the bellows by the mass on the end of said elongate element.

WHAT WE CLAIM IS:—

1. A doll of the aforementioned type having mounted therein animating means for controlling its functions, said means comprising a weight attached to an elongate element slidably and rotatably mounted in a swivel bearing, whereby the elongate element is displaced when the orientation of the doll is changed and said displacement actuates connecting means controlling said functions of the doll.

2. A doll according to claim 1, wherein the doll comprises two substantially enclosed casings into which project the respective ends of the elongate element, the swivel bearing for said element being located intermediate the interiors of said casings.

3. A doll according to claim 2, wherein the trunk of said doll comprises a first of said casings and the head comprises a second, said swivel bearing being located substantially at the level of the neck.

4. A doll according to claim 3, wherein said second casing is pivotally mounted on said first casing.

5. A doll according to claim 3 or claim 4, wherein the interior of said first casing comprises a substantially frusto-conical section.

6. A doll according to any one of claims 3 to 5, wherein said first and second casings are substantially rigid and not deformable.

7. A doll according to claim 6, wherein a jaw portion is movably relative to said second casing.

8. A doll according to any one of claims 2 to 7, wherein a deformable flexible material is moulded over said casings to form the body of said doll.

9. A doll according to any one of claims 2 to 8, wherein the casings are held together in spaced relation to each other by the envelope of the body of said doll which is moulded from a flexible material moulded or cast thereover.

10. A doll according to any one of claims 5 to 9, wherein said swivel bearing is located at the end of said frusto-conical section of casing interior which has least cross-sectioned area.

11. A doll according to any one of claims 1 to 9, wherein said swivel bearing is mounted between members which have frusto-conical bores coaxially aligned and opposed so as to provide for and limit the angular motion of said elongate element.

12. A doll according to claim 11 when dependent to any of claims 3 to 9, wherein one of said members consist of the bottom

of the head and the other of an insert secured underneath the head.

13. A doll according to any one of claims 2 to 12, wherein said weight is attached at one end of the elongate element and the majority of the connecting means controlling the function of the doll or actuated by that portion of the element projecting into the casing remote from the weight.

14. A doll according to any one of claims 2 to 13, wherein at least one collar is slidably mounted on said elongate element, and the connecting means controlling the functions of the doll comprise cables attached to and actuated by the movement of the collar or collars.

15. A doll according to any one of claims 3 to 14, wherein a sliding member is mounted on said elongate element within the trunk casing, said sliding member comprising two sockets for accommodating respective ball joints provided at free ends of a pair of curved rockers which extend freely through orifices formed in the envelope of the body of said doll, the other ends thereof carrying counterweights which engage the respective hollow arms of said doll.

16. A doll according to any one of claims 3 to 15, wherein the movements of the eyes are produced by a mechanism which comprises a ball-and-socket joint freely slidable on said elongate element, a rocker arm pivotally connected to said ball-and-socket joint and a pair of rods slidable at each end of said arm and connected to the respective eyes.

17. A doll according to claim 16, wherein on each rod connecting the rocker arm to its respective eye is mounted a fork, the arms of which engage upper and lower eyelids of said eye made from the resiliently deformable lining material covering the doll, one of said arms being pivotally connected to the other and to the skull whereby the arms can effect relative closing and opening movements with movement of the elongate element.

18. A doll according to any one of claims 3 to 17, wherein at the free end of the elongate element is fastened a cable which is led over at least one guide sheave and is connected at its other end to a cranked element embedded in the chin of said doll, whereby movement of said elongate element effects movement of said chin.

19. A doll according to any one of claims 3 to 18, wherein the doll has a tongue which comprises a hollow bulb-shaped moulding made from a resilient material and having a hole in its lower wall for the emission of fluid, the tongue being housed in a buccal cavity formed in the doll.

20. A doll according to any one of



claims 3 to 19, wherein said doll is provided with a bladder chamber connected to a urethra tube.

5 21. A doll according to claim 20 when dependent to claim 19, wherein said bladder chamber and the interior of the tongue bulb are connected by an ingestion tube.

10 22. A doll according to claim 20 or 21, wherein said doll is a female sexed doll the urethra of which comprises a cut-out provided through a reduced thickness of the envelope of said doll at the desired location, effected by moulding a lenticular recess into the inner face of said envelope at said location.

15 23. A doll according to any one of claims 20 to 22, wherein said bladder chamber is located between said first casing and a flexible deformable lining covering the body of said doll, said chamber containing at least one movable ball element adapted to close fluid connections with said cavity according to the position of said doll.

20 24. A doll according to any one of claims 20 to 22, wherein said bladder chamber is located below said first casing and is formed in a deformable material moulded over said casing to form the body of the doll, and wherein the moulded body has a strengthened ring portion at the upper region of said
25 bladder chamber whereby said chamber is
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sealed at its upper part by a plug inserted in said ring portion.

25. A doll according to any one of the preceding claims, wherein there is provided at least one bellows normally urged towards extension the weight being engageable with said bellows whereby the extension of the bellows changes with movement of the weight and compressed air is discharged into control circuits for operating various movable elements and parts of said doll.

26. A doll according to claim 25 wherein a biasing spring is mounted within each said bellows, the force of said spring almost offsetting the effect of the weight.

27. a doll according to claim 25 or claim 26, when claim 25 is dependent to claim 24, wherein said at least one bellows is mounted on said plug to extend into said first casing.

28. A doll of the aforementioned type constructed and arranged for use substantially as described herein with reference to and as shown in the accompanying drawings.

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