Oct. 27, 1964 R. G. BAULARD-COGAN 3,153,881

ANIMATED DOLL

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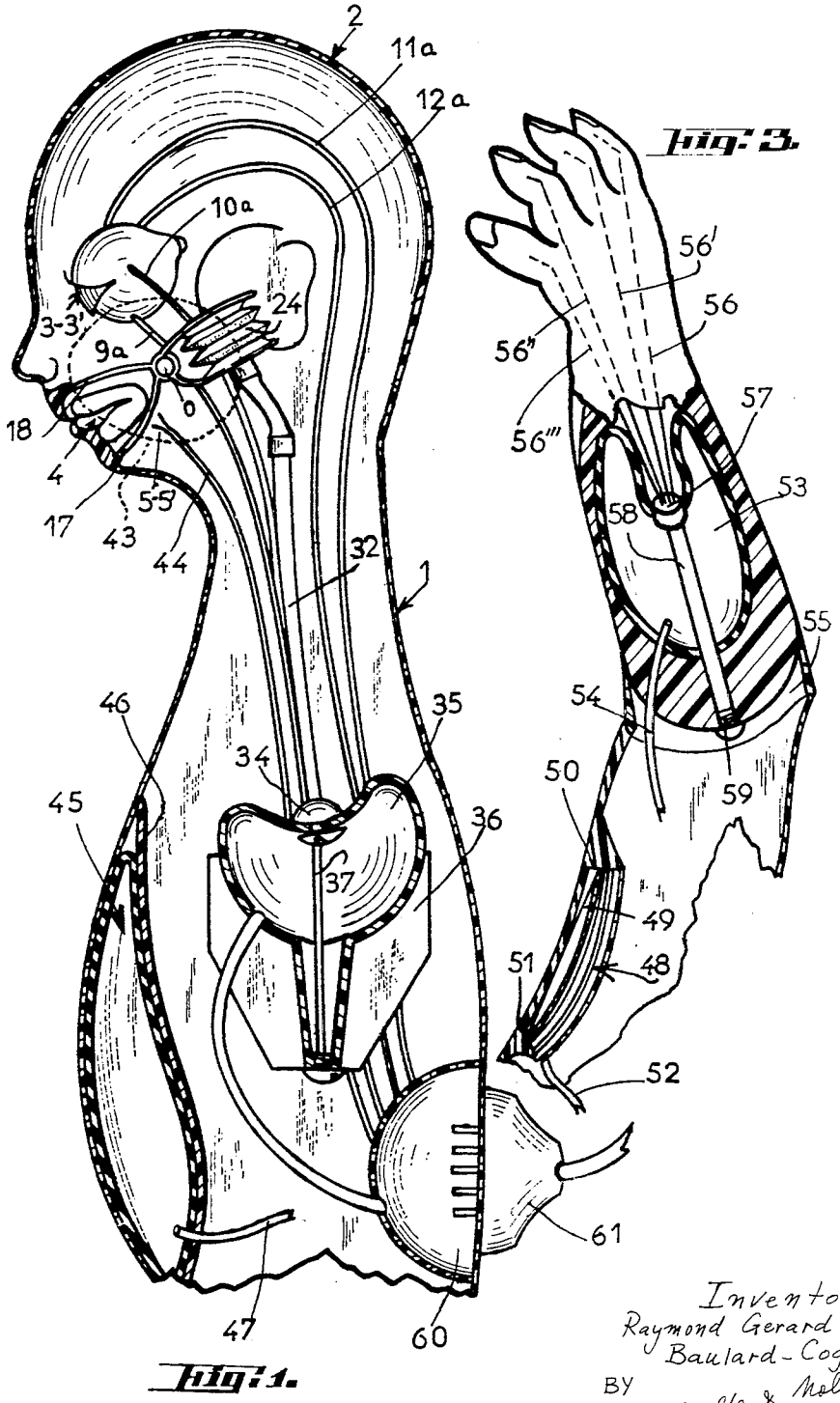

Fig: 1.

Fig: 3.

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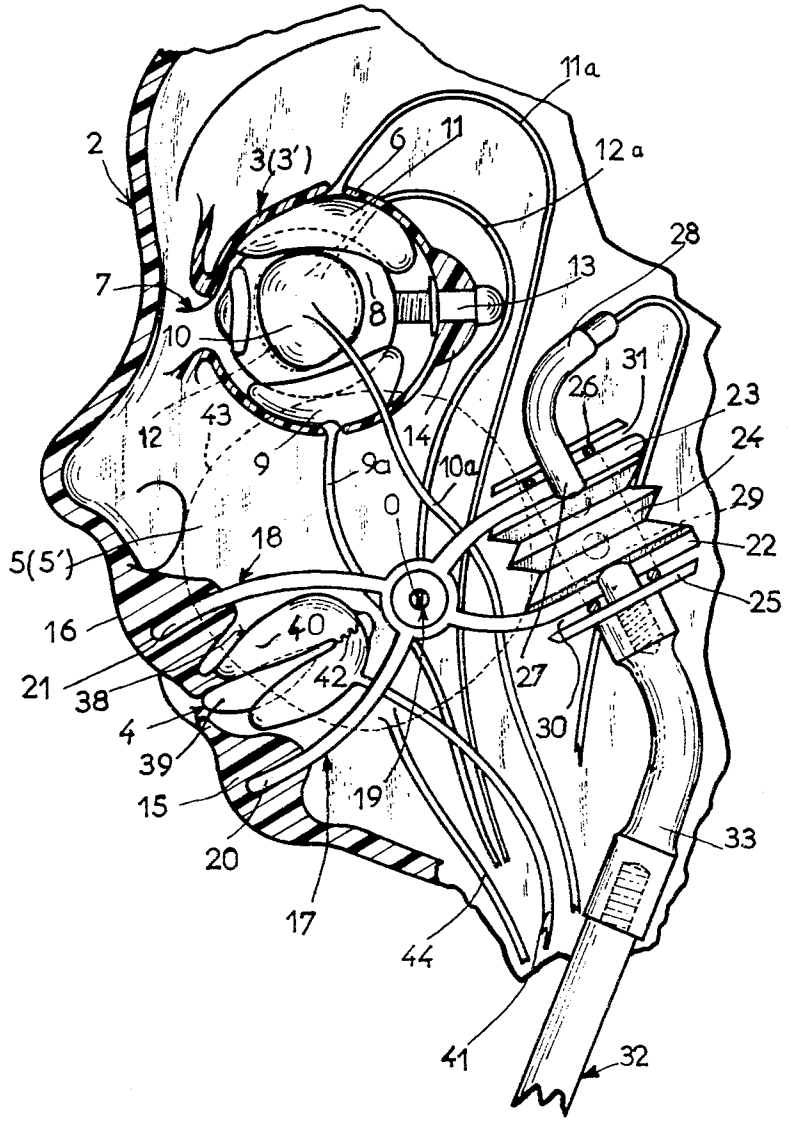
Fig. 2.



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ANIMATED DOLL

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The present invention has for its object dummy bodies made of flexible material, such as dolls, figured or imaginary characters, toys, animals, and the like, capable of being animated.

It has long been known to resort to mechanical methods of animating puppets and the like.

Such mechanical methods, however, preclude giving a lifelike appearance to the movements of the puppets, which remain abrupt, stiff and inhibited; in a word, they appear artificial no matter how skillful the operator may be. Furthermore, the latter must be placed in proximity to the puppet he is animating.

The present invention has for its object animated dolls and dummy bodies with which complex and subtle movements can be obtained and a lifelike appearance given to the movements of a puppet for example, and which additionally lend itself to remote control.

According to the present invention, a fluid is injected into or expelled from flexible pockets that are preferably non-elastic or have limited elasticity and are provided within the body of the object. The consecutive deformations of said pockets determine, if necessary through the medium of convenient transmission means, the deformations or movements of the body of said object.

In accordance with a further particularity of the invention, biasing means are provided to maintain said pockets in the normally deflated condition.

In accordance with another particularity of the invention, the aforementioned pockets are independent of one another and each is connected to a source of fluid under pressure, with interposed regulating and shutting-off means.

According to yet a further particularity of the invention, a plurality of independent pockets are associated with a single organ of the object, for instance with the eye or the mouth say, in the case of a doll, to enable complex movements thereof to be obtained.

It will immediately be appreciated that in this way all the movements and expressions of the human body can be simulated. Moreover, such animation may be remote-controlled or even radio-controlled.

This is a particularly useful feature, enabling the dolls to be used in the theatre, for cinema or television purposes, or for other forms of entertainment.

The present invention likewise covers such dolls, figurative or imaginary characters, animals, toys, or the like, made of flexible material, as are notably characterized by the fact that flexible pockets, which are preferably non-elastic or have limited elasticity, are provided within the body of the aforementioned objects and connected to a source of fluid under adjustable pressure. The pockets are at the same time subjected to a biasing force tending to maintain them in the deflated condition, control the deformations and movements of the body of the object, if necessary through the instrumentality of convenient transmission means.

With these and other objects in view which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, which are filed herewith by way of example only and in which:

FIGURE 1 is a highly diagrammatic sectional view of the upper part of the body of a doll;

FIGURE 2 is a larger-scale sectional view of the head of the doll in FIGURE 1, and

FIGURE 3 is a longitudinal section through one of the arms.

A doll according to the illustrated example consists of a hollow body 1 made of a flexible material, for example of some synthetic material. Inside the body 1 are accommodated the mechanisms enabling the various organs of the doll to be animated. By way of example, there is illustrated in FIGURE 2 a head 2 of the doll and, in FIGURE 3, one of its arms.

The head 2 comprises various independent organs, such as eyes 3, 3', mouth 4 and cheeks 5, 5'.

Evidently, other parts of the face may also be animated, but for greater clarity the description hereinafter is confined to the aforementioned organs only.

The left eye 3 shown in FIGURE 2 comprises a spherical envelope 6 which is preferably made of some semi-rigid material and constitutes a socket. This socket is provided at 7 with an aperture which may be of oblong, circular or other shape and the edge of which is glued, welded or otherwise secured to an identical aperture provided in the face of the doll. In the envelope 6 is accommodated the eyeball consisting of a rigid sphere 8, the diameter of which is less than the inner diameter of the envelope 6, and small pockets 9, 10, 11, 12, that preferably have little elasticity and that are positioned between the eyeball 8 and the inside face of the envelope.

In a preferred embodiment, these pockets are four in number and are diametrically opposed in pairs, but it is manifest that a different number of pockets may be used without departing from the scope of the invention.

The said pockets 9, 10, 11 and 12 are preferably spherically shaped. They are compressed between the eyeball 8 and the inside face of the envelope 6 and are normally urged into a substantially hemispherical shape, as illustrated.

Tubes 9*a*, 10*a*, 11*a*, 12*a*, connected to the corresponding pockets, pass through the wall of the envelope, via suitable holes, and convey the pressurized fluid to the various pockets.

In order to be able to adjust the position of the eye and the depth to which it is set into its socket, an adjustment screw 13 is provided to co-operate with a reinforcement 14 on the envelope. This screw is preferably located diametrically opposite the aperture 7.

The manner of operation is as follows:

If a fluid under pressure be injected simultaneously into all the pockets, the latter will together thrust against the rigid eyeball 8 and cause the envelope 6 to recede therefrom. Since the envelope is slit to permit eyelid movement, said thrusting effect causes the envelope to spread open, thereby producing a visible opening of the eye, ranging from a mere blinking effect to a stare with the eyes starting from the head.

The eyelids are opened by the simultaneous pressure in the pockets 9 and 11 located above and below the eye, respectively.

Downward or upward eye movement is produced naturally and progressively by the greater or lesser controlled pressure exerted in one or the other of the upper or lower pockets.

Similarly, glances to the right or to the left are obtained by the pressure exerted simultaneously or separately, in both or one of the pockets 10 and 12 located to the right and to the left of the eye.

The two eyes may be controlled independently, thereby enabling a synchronized or non-synchronized convergent or divergent look to be obtained, as required.

The mouth 4 has lips 15 and 16 controlled by two levers 17, 18 having a common floating fulcrum pin 19.

The ends 20, 21 of these levers are engaged into the body of the lower and upper lips 15 and 16, respectively, or are fixed thereto in any convenient manner, the opposite ends 22, 23 being yoked about a preferably cylindrical, bellows-shaped pocket 24, the whole assembly being free to move about in a cavity provided in the head of the doll.

In the example illustrated, the ends of the bellows 24 are secured between plates 25, 26, to which are in turn fixed the lever arms 22 and 23. The plate 26 is provided with a hole 27 into which debouches a tube 28 for conveying fluid to the pocket 24.

An elastic band 29 is fixed to the plates 25 and 26 and restores the bellows into the folded position. As shown, this band may have its ends fixed in grooves 30, 31 provided on the plates 25, 26.

In addition, a rod 32 is fixed to the plate 26, being screwed or welded thereon, say, and actuates the levers 17 and 18 in the cavity formed in the head.

The rod 32 has a semi-rigid terminal portion 33 that allows the neck of the doll to be twisted or bent without interrupting any of the other functions. The other end 34 of this rod (FIGURE 1) is fixed to the wall of a preferably spherical flexible pocket 35 lodged in a hemispherical cradle 36 rigid with the body 1 of the doll.

To this attachment point of the rod 32 is secured the end of an elastic biasing component 37 that passes through the pocket 35, is fixed to the bottom of the cradle 36, and normally urges the arms 22, 23 of levers 17, 18 downwardly through the medium of the rod 32.

It is clear, therefore, that by varying the pressure inside the bellows 24, the mouth can be opened to any desired extent, and, through the simultaneous or non-simultaneous action of the rod 32 actuated by the pocket 35, can make the face reflect every conceivable expression ranging from one of sadness to a smiling or laughing expression.

Thus, when the pocket 35 is deflated, the point 0 is in the lowermost position and the face depicts maximum sadness.

In response to pressure in the pocket 35, however, the point 0 rises and gives the face an ideal neutral expression.

As the pressure in the pocket is accentuated, the point 0 continues to rise and gives the face an ideal similing expression. If the pressure is still further increased, the point 0 contacts a fixed point of the cavity in the head of the doll. The head is thus in turn subjected to an upward and forward thrust, thereby producing a tilting movement followed by a return to the normal position when deflation takes place.

It will be noted that the cradle 36 leaves the upper face of the pocket 35 unobstructed, thereby allowing the rod 32 to move within a cone of revolution and to function perfectly regardless of head orientation.

Inside the mouth 4 is disposed a rigid or semi-rigid envelope 38, and this envelope, which may be bell-shaped for example, is adapted to receive a rigid tongue 39. In the bottom of this envelope is arranged a small preferably spherical pocket 40 supplied by a tube 41 passing through the envelope and connected to the source of pressurized fluid. The base of the tongue is fixed to the wall of the pocket 40 and to an elastic biasing component 42 that passes through the pocket and is secured at its other end to the bottom of the bell 38, thus keeping the tongue thrust into the pocket. An increase in the pressure exerted in the pocket 40 causes the latter to unfold and to thrust the tongue outwards, while at the same time imparting to it a curving upward movement.

The manner in which the cheeks function is likewise extremely simple. A pocket 43 is imprisoned between the reduced outer flexible envelope forming the apparent surface of each cheek and a rigid or semi-rigid wall which is fixed to the inside face of the envelope by gluing, for instance.

A tube 44 connects the pocket 43 to the source of pressurized fluid. Thus, as the pressure in the pocket 43 is increased, the outer envelope is deformed and gradually caused to swell. The rigidity of the aforesaid wall preferably goes decreasingly from the edges in towards the centre, in order to ensure progressive deformation of the cheek.

Referring now to FIGURE 1 once more, it will be seen that the chest and abdomen movements required to imitate breathing are obtained in a similar way. A pocket 45 is imprisoned between the flexible outer envelope (reduced locally to make it slightly elastic) and a rigid or semi-rigid wall 46. A tube 47 conveys the pressurized fluid into the pocket 45. When this pocket 45 is inflated, it deforms and distends the outer envelope, thereby providing a perfect imitation of breathing.

FIGURE 3 illustrates the actuating devices used for each elbow and each hand.

In each elbow is accommodated an internally fluted pocket 48 of cylindrical or ovoid shape for example, which is integrally united to the wall of the elbow. An elastic biasing component 49 fixed to the ends 50, 51 of the pocket retains the latter in the folded position.

When a pressurized fluid is injected into the pocket 48 through a tube 52, said pocket straightens out and consequently causes the elbow to unbend, the internal flutings preventing the folded pocket from separating into two chambers and also promoting progressive re-inflation of the pocket.

In the example shown, finger movement is controlled by a single spherically shaped flexible pocket 53 connected to the source of pressurized fluid through a tube 54, the base of said pocket being lodged in a rigid substantially hemispherical cradle 55 integral with the body of the arm.

Cables or rods 56, 56′, 56″, 56‴, 56⁗, respectively terminating at the various fingers, have their opposite ends clustered together and secured at 57 to the wall of the pocket 53.

An elastic biasing component 58 provided in the pocket 53 and fastened between the extremities 57 of said cables or rods and a point 59 at the bottom of the cradle 55 tends to keep the pocket deflated, as a result of which the stretched cables cause the fingers to bend.

When fluid is injected into the pocket, the latter assumes its natural shape, thereby slackening the cables or rods and allowing the fingers to straighten.

Whereas operation of only a limited number of the organs of a doll have been described hereinabove, it is manifest that other organs can likewise be animated by the method hereinbefore described without departing from the scope of the invention.

The various tubes conveying fluid to the flexible pockets associated with the different parts of the body of the doll, or the like, are connected to a source of pressurized fluid, shutting-off and regulating means being interposed in each tube or group of tubes.

A plurality of pockets may be controlled by a single regulating device, and the source of pressurized fluid and the various regulating and shut-off devices may be arranged either outside or inside the body of the doll or other animated object, and in the latter case they may be remote-controlled by wires, radio waves, or other convenient means.

In the specific case where the source of pressurized fluid and the actuating means are disposed outside the body of the doll or other animated object, it is possible, as shown in FIGURE 1, to lead all the tubes up to a multiple female connector 60 which is placed, say, on the back of the doll and with which co-operates a multiple male connector 61 connected through clustered tubes, for example, to a control unit (not shown) consisting, say, of flexible bulbs or the like.

Manifestly, the expedient hereinbefore described may be used to animate a variety of objects other than dolls,

examples being toys, animals, figurative or imaginary characters, masks, and the like, without departing from the scope of the invention.

The invention is applicable, in particular, to the animation of figurative or imaginary characters for theatrical, cinema, television or other entertainment purposes.

While a plurality of embodiments have been described and illustrated, it is to be understood that these embodiments are given by way of example only and not in a limiting sense, and that the scope of the invention is by no means restricted to them.

What I claim is:

1. A dummy body made of flexible material having a face portion, an eye in said face portion, said eye comprising a substantially semi-rigid spherical envelope with a front aperture, a smaller-sized rigid eyeball in said spherical envelope, a plurality of independent pockets interposed between said eyeball and said envelope, and sources of fluid of adjustable pressures connected to said pockets, the edges of said front aperture being integrally united to the edges of a corresponding aperture provided in said face portion.

2. A dummy body as claimed in claim 1, wherein an adjustment screw is provided in said envelope to position said eyeball.

3. A dummy body made of flexible material having a hollow head, a mouth on said head provided with lower and upper lips, two levers pivotally mounted about a floating common fulcrum-pin in said hollow head, one end of each of said levers being rigidly united to said upper and lower lips respectively, while the opposite ends imprison a pocket connected to a source of fluid of adjustable pressure, the free end of one of said levers being fixed to a rod the movements of which are controlled by an independent pocket connected to a source of fluid of adjustable pressure.

4. A dummy body as claimed in claim 3, wherein said rod comprises a semi-rigid portion in the region corresponding to the neck of said dummy body, which enables said neck to be twisted or bent without interrupting the movements of said rod.

5. A dummy body made of flexible material comprising a hollow head made of flexible material and comprising cheek portions, semi-rigid walls located within said hollow head and having a rigidity decreasing from their edges in towards the centre, said semi-rigid walls being united with said hollow head at their periphery, and pockets disposed between said walls and said head and connected to a source of fluid of adjustable pressure so that their deformations result in said cheek portions being blown out.

6. A dummy body made of flexible material having a hollow head, a mouth provided on said hollow head, a buccal cavity formed in said hollow head and consisting of a semi-rigid bell-shaped envelope, a pocket disposed within said envelope and connected to a source of fluid of adjustable pressure, a tongue-forming element secured to said pocket, and an elastic member connecting said tongue-forming element to the bottom of said envelope.

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