

April 19, 1966

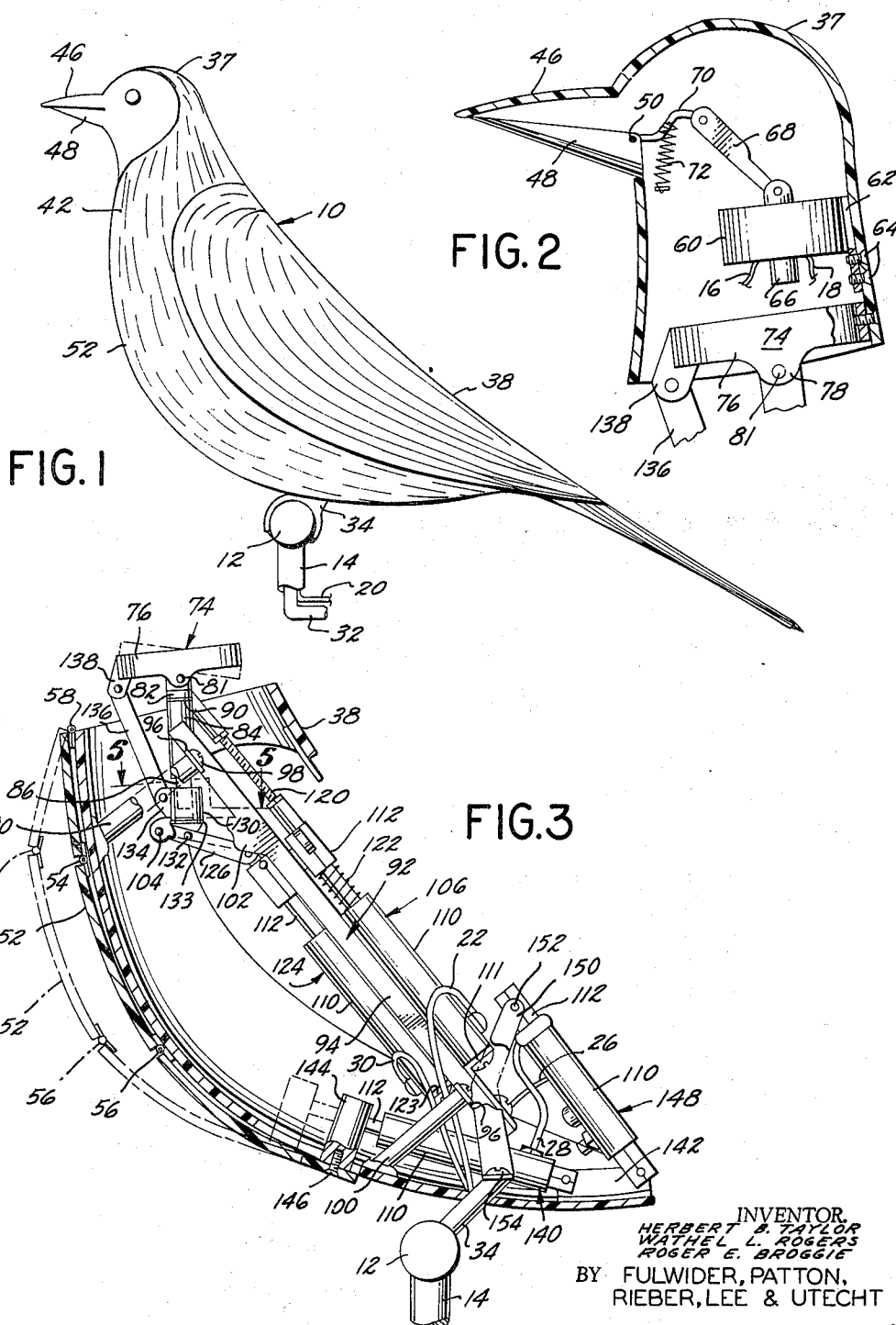
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3,246,409

ANIMATED FIGURE

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ANIMATED FIGURE

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FIG. 4

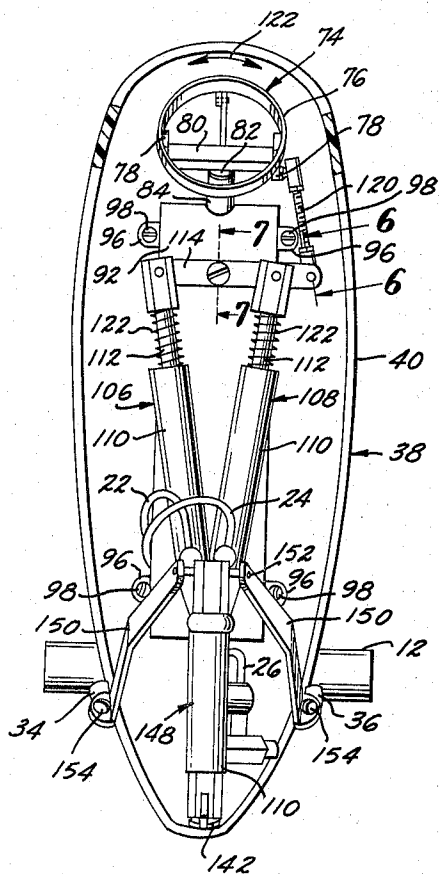


FIG. 5

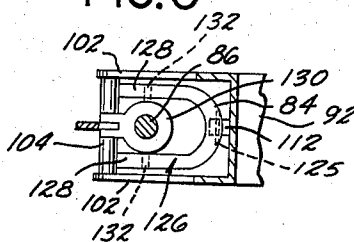


FIG. 6

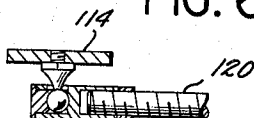


FIG. 7

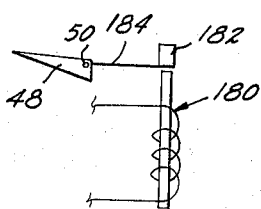
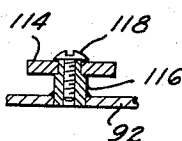


FIG. 8

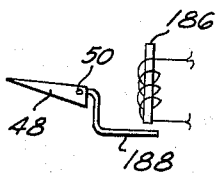


FIG. 9

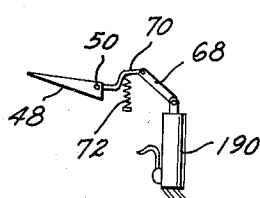


FIG. 10

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ANIMATED FIGURE

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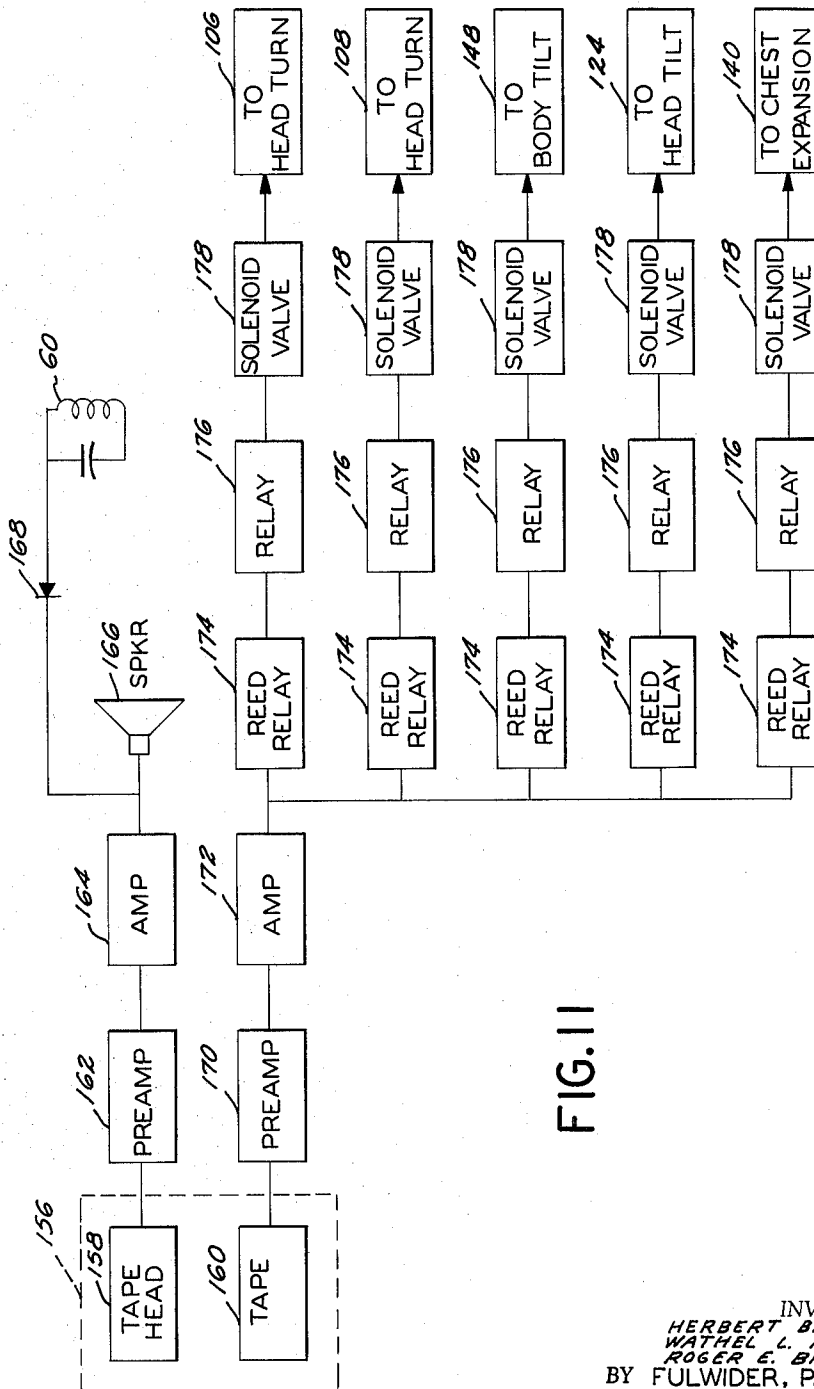


FIG. 11

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ANIMATED FIGURE

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14 Claims. (Cl. 40—28.3)

The present invention relates to an animated figure, and more particularly to an animated figure incorporating both fluid-actuated and electrically-actuated components for providing mouth movements and accompanying head and body movements to produce an overall, coordinated animation of life-like quality.

There are a number of arrangements in the prior art which simulate mouth movements of a figure contemporaneously with a vocal program emanating from an associated loudspeaker or the like. For a number of reasons, figures animated by such prior art arrangements have not been completely effective in providing a true simulation of their living counterparts, particularly in those situations requiring that the animated model or figure be apparently dissociated from the animating control mechanisms. The sophistication and discrimination of present day audiences require a high degree of animation, carefully coordinated with the vocal or musical program to effectively establish the illusion of life in an artificial object. The figure must be animated by components completely hidden from view and operated from remotely located control stations through unobtrusive cables and conduits small enough to be readily concealed in the structure supporting the figure. The animation itself must be smooth, integrated, and ostensibly occur solely through the exertions of the character represented by the figure.

Electro-responsive devices such as solenoids and the like have been extensively employed for this purpose, particularly in effecting the desired mouth movements, the term "mouth" being intended in the present connotation to include the beaks of birds as well as the lips or jaws of simulated human beings. However, the nature and extent of excursion of solenoid cores, for example, is not always adapted to provide the desired character of body movements, particularly the fluid, natural movements which an observer associates with a live being.

Accordingly, it is an object of the present invention to provide an animated figure which incorporates an electro-responsive component, such as a solenoid or the like, which is sensitively responsive to control signals keyed to a vocal program, and which incorporates a plurality of fluid-operated devices separately or collectively operable to provide a variety of body movements integrated with the vocal program.

The present invention is particularly adapted for use in conjunction with small figures such as birds, and it is another object of the invention to utilize both electro-responsive and fluid-actuated devices to lend a life-like realism to these small figures. A vocal effect is created by coupling the beak and the electro-responsive device, and the body movements normally associated with the programmed vocal exertions are contemporaneously simulated by coupling the fluid-actuated devices with various portions of the body to make the body tilt and the head tilt and turn.

A further object of the invention is to provide an animated figure of the aforementioned character wherein all of the components for effecting movements of the figure are completely hidden from view and adapted for control from a remotely located control station by means of a previously taped or recorded program, the operation of the figure thus being adapted for completely

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automatic operation. This arrangement also permits a number of such figures to be simultaneously controlled by the same program source to produce unusual effects. Thus, an entertaining "chorus" of birds can be made to sing a song in unison, all the while turning their bodies and turning and tilting their heads to lend interest and realism to the performance.

A further object of the invention is to provide an animated bird-like figure of the aforementioned character having a hollow body incorporating a fluid-actuated device adapted for synchronization with the vocal program and operative to expand and contract the bird's breast in simulation of inhalation and exhalation during singing.

Another object of the invention is to provide an animated figure of the aforementioned character in which animation is effected by components adapted to be compactly arranged in the hollow interior of the figure and which are relatively inexpensive, readily available, reliable, and characterized by long service life.

Other objects and features of the invention will become apparent from consideration of the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a side elevational view of an animated figure in the form of a bird;

FIG. 2 is an enlarged, side elevational, cross-sectional view of the head of the figure of FIG. 1;

FIG. 3 is an enlarged, side elevational, cross-sectional view of the body of the figure of FIG. 1;

FIG. 4 is an enlarged plan view of the lower body section of the figure of FIG. 1;

FIG. 5 is a detail view taken along the line 5—5 of FIG. 3;

FIG. 6 is a detail view taken along the line 6—6 of FIG. 4;

FIG. 7 is a detail view taken along the line 7—7 of FIG. 4;

FIG. 8 is a second embodiment of the electro-responsive device for actuating the bird's beak;

FIG. 9 is a third embodiment of the electro-responsive device for operating the bird's beak;

FIG. 10 is a fourth embodiment of the electro-responsive device for operating the bird's beak; and

FIG. 11 is a diagrammatic view of the control system for actuating the devices which animate the figure of FIG. 1.

Referring now to the drawings, and particularly to FIGS. 1—7 thereof, there is illustrated an artificial figure 10 representing a bird sitting on a horizontal, tubular perch 12 which is supported by a suitable tubular upright 14. The figure 10 may be located in a natural setting and animated for the amusement of passers-by, or a number of the figures 10 may be arranged in a room and animated in accordance with a predetermined program for the entertainment of a seated audience.

The figure is controlled, as will be seen, through a pair of wires 16 and 18 carried in a cable 20, and by fluid lines 22, 24, 26, 28, and 30, bundled together in a conduit 32. The cable 20 and conduit 32 are concealed from view by disposition through the hollow interior of the support upright 14, the hollow interior of the perch 12, and the hollow interior of one of a pair of legs 34 and 36 which form a part of the figure 10 and which are rigidly fixed to the perch 12 to secure the figure 10 in position.

A loudspeaker (not shown) is located nearby to carry the vocal or audio program associated and coordinated with the movements of the figure 10, and is suitably concealed to give the illusion that the figure 10 is singing or speaking. Alternatively, the loudspeaker could be located in the hollow interior of the figure 10, but preferably it is externally located to direct the sound

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in a particular direction independently of the changing position or attitude of the figure 10.

The figure 10 comprises a head 37 and a body 38 constituted of upper and lower sections which are separably secured together in any suitable manner, the lower section being illustrated in FIG. 4 at 40. The head 37 and body 38 are preferably made of a plastic material such as resin-reinforced glass fiber material, and a resilient, outer covering 42 is stretched over the head and body and carries feathers and similar decorative material, as will be apparent. The resilience of the covering 42 is also useful in providing a bias force which tends to return the components of the figure 10 to a predetermined or normal position subsequent to any animating movement thereof.

The head 37 includes an integral upper mouth or beak portion 46, and a lower mouth or beak portion 48, preferably made of metal, is pivotally mounted to the head 37 by means of a transverse pin 50 secured at its opposite ends to the opposite sides of the head 37. The covering 42 tends to conceal the joint between the adjacent extremities of the head 37 and the body 38, as illustrated only in FIG. 1, the covering 42 being omitted from the remaining figures of the drawings for simplicity.

The body 38 also includes a breast portion 52 having a width and length sufficient to overlie the frontal or breast area of the figure 10. The breast portion 52 is designed to simulate breathing of the bird figure, and for this purpose is jointed or segmented into three parts which are connected together by hinges 54 and 56 for pivotal movement relative to each other along transverse, approximately horizontal axes. The upper extremity of the breast portion 52 is pivotally mounted to the upper extremity of the lower body section 40 by a hinge 58, and the opposite or lower extremity of the breast portion 52 is slidable upwardly and downwardly upon the adjacent, arcuate surface of the body 38.

As illustrated in phantom outline in FIG. 3, movement of the lower extremity of the breast portion upwardly bows the breast portion 52 outwardly into a curvilinear configuration, spaced from the body 38 except at its upper and lower extremities. Conversely, movement of the lower extremity of the breast portion 52 downwardly orients the breast portion 52 in substantially coextensive engagement with the adjacent portion of the body 38. The breast portion 52 is thus adapted to simulate swelling of the bird's breast as it begins to sing so that, when properly coordinated with the actuation of the lower beak portion 48, striking realism occurs. The resilience of the covering 42 tends to return the breast portion 52 to its normal position in coextensive engagement with the body proper, but a suitable tension spring or the like (not shown) may be secured to the body 38 and breast portion 52 to provide a greater biasing force if desired.

The means by which the lower beak portion 48 is actuated includes an electro-responsive device preferably constituted by a solenoid 60 to which the wires 16 and 18 are electrically coupled for energization thereof. The solenoid 60 is suitably secured to a bracket 62 which in turn is secured to the head 37 by a pair of screws 64.

The solenoid core 66 is movable upwardly in response to energization of the solenoid 60, and its upper extremity is pivotally connected to the lower extremity of a link 68 whose upper extremity is pivotally secured to one extremity of a spring link 70. The opposite extremity of the link 70 is rigidly secured to the pivotable lower beak portion 48. With this arrangement, energization of the solenoid 60 moves the core 66 upwardly to effect pivotal and opening movement of the beak portion 48 about the pin 50. When the solenoid 60 is deenergized, the beak portion 48 is resiliently returned toward its closed position, illustrated in FIG. 2, under the bias of a tension spring 72 which is connected at one extremity to the head 37 and at its opposite extremity to the mid-portion of the spring link 70. The manner of energization of the sole-

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noid 60 will be described subsequently in connection with a description of the control system for the figure 10.

The head 44 is rigidly mounted to a head support 74 comprising a cylindrical ring 76 having a pair of depending tabs 78, FIG. 2; a transversely oriented bar 80 pivotally mounted at its opposite extremities to the tabs 78 by a pair of pins, one of which is illustrated at 81; a vertically oriented stub rod 82 rigidly secured at its upper extremity to the bar 80 and provided at its lower extremity with a reduced diameter portion (not shown); and an elongated, vertically oriented support rod 84 having a central bore (not shown) at its upper extremity for rotatably receiving the stub rod 82, and a reduced diameter portion 86 at its lower extremity for vertically slidably mounting a collar 130.

An annular washer 90 made of suitable bearing material is interposed between the rod 84 and the abutting, relatively rotatable rod 82 to facilitate rotational movement therebetween, and the support rod 84 is rigidly secured to an elongated frame 92, as by brazing or the like.

It is noted that although the rod 82 is rotatable, the rods 82 and 84 are constructed so that axial separation thereof is normally prevented, as by a suitable snap-ring arrangement or the like (not shown), as will be obvious to those skilled in the art.

The frame 92 constitutes the primary support structure for the majority of the components located within the hollow interior of the body 38 and is preferably made of sheet metal having integral side flanges 94. The forward and rearward extremities of the flanges 94 are provided with lateral mounting tabs 96 which include openings for receiving mounting screws 98 for securement of the tabs to the upper extremities of four elongated mounting rods 100. The opposite extremities of the mounting rods 100 are rigidly adhered to the adjacent interior surface of the body 38, as by means of a suitable adhesive or the like, so that the frame 92 is rigidly secured to the body 38.

The frame flanges 94 also include a pair of support arms 102 which rotatably support the opposite extremities of a transverse rod 104 which, as will be seen, is a part of the mechanism for tilting the bird's head.

As best viewed in FIGS. 3 and 4, the bird's head 37 is turned from side to side by a pair of substantially identical fluid-actuated turn devices 106 and 108 which each comprises an air cylinder 110 secured to the frame 92 by a bracket 111, and within which a piston (not shown) is slidably driven by compressed air introduced through the associated air line 22 or 24, as the case may be. Each piston includes a piston rod 112, and the pair of rods 112 are pivotally connected to the opposite extremities of an elongated, transversely oriented cross-bar 114. The cross-bar 114, in turn, is pivotally connected to the frame 92 at a point between the connections of the piston rods 112 to the bar 114. As best illustrated in FIG. 7, the cross-bar 114 is rotatable upon a shoulder provided adjacent the upper end of a tubular spacer 116 which is rigidly fixed to the frame 92. A screw 118 is threaded into the spacer 116, and engages the end of the spacer 116 to maintain the cross-bar 114 in position while allowing it to pivot about the axis of the screw 116.

As best viewed in FIG. 6, the cross-bar 114 is pivotally connected at one extremity to one end of an elongated connecting link 120, the opposite end of the link 120 being pivotally connected to one of the lateral tabs 78 of the head support ring 76. The pivotal connections are of the universal joint type, the tab 78 and the cross-bar 114 each mounting a ball which is universally movable within a complementary socket provided in the adjacent extremity of the link 120. With this arrangement, pivotal movement of the cross-bar 114 in response to actuation of one of the turn devices 106 and 108 effects pivotal or partial rotation of the bird's head 37 in one direction or the other, depending upon which of the devices is actuated, as indicated by the arrows 122 in FIG. 4. The re-

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silience of the outer covering 42 tends to return the head 37 to its normal position when neither of the devices is actuated, although preferably a compression spring 122 is utilized to better insure such return. Each spring 122 is disposed over one of the rods 112 and exerts its bias against the enlarged end of the rod and against the adjacent cylinder, and thereby resisting extension of the other piston.

Tilting of the bird's head 37 is produced by a fluid-actuated tilt device 124 which is substantially identical to the turn devices 106 and 108. Accordingly, like reference numerals are utilized where like parts are involved. Thus, the air cylinder 110 of the tilt device 124 is secured to the underside of the frame 92 by a bracket 123, and adapted to receive compressed air through the air line 30 to force the piston rod 112 thereof upwardly and forwardly. As best viewed in FIG. 5, the upper or forward extremity of the piston rod 112 is pivotally mounted by a transverse pin 125 to a U-shaped yoke 126 whose opposite legs 128 are rigidly secured to the rod 104. The rod 104, as previously described, is pivotally carried by the frame support arms 102, so that the action of the piston rod 112 is to pivot the yoke 126 about the axis of the transverse rod 104. This pivotal action is converted into an up and down reciprocal movement of a two-part collar 130 which is vertically slidably mounted upon the reduced diameter lower portion 86 of the support rod 84. The yoke 86 is pivotally connected to the lower part of the collar 130 by a pair of transverse pins 132 connected therebetween.

The upper part of the collar 130 includes a central bore which slidably and rotatably receives the support rod lower portion 86. However, the two parts of the collar 130 are constrained against axial separation by a suitable snap-ring arrangement (not shown) similar to the interconnection between the stub rod 82 and the support rod 84, and an annular washer 133 of suitable bearing material is interposed between the abutting parts of the collar 130 to facilitate relative rotation therebetween.

The upper portion of the collar 130 includes an integral mounting tab 134 which is pivotally connected by an elongated link 136 to a mounting tab 138 which is integral with the forward portion of the head support ring 76. With this arrangement, actuation of the tilt device 124 pivots the yoke 126 about the axis of the rod 104, upwardly sliding the collar 130 upon the rod portion 86, and tilting backwardly the bird's head 37 about the axis of the pins 81, as shown in phantom outline in FIG. 3. The head is preferably returned to its normal position under the bias of the outer covering 42 and the weight of the head, although a spring or the like (not shown) may be used for additional bias, if desired.

It is to be noted that since the stub rod 82 and the upper portion of the collar 130 are both freely movable relative to the rod 84 and the tilt device 148, the turning of the bird's head can be accomplished independently or in conjunction with tilting of the bird's head.

Breathing of the FIGURE 10 is simulated by the action of the breast portion 52, which is expanded or bowed outwardly by a fluid-actuated chest expansion device 140 substantially identical to the turn and tilt devices 106, 108, and 124. The air cylinder 110 of the device 140 is pivotally secured to a T fitting 142 rigidly affixed to the interior surface of the bird body 38, and the piston rod 112 thereof is moved outwardly to the phantom line position indicated in FIG. 3 upon admission of compressed air through the air line 28. This outward movement is transmitted to the breast portion 52 by a link 144 which is connected to the piston rod 112, and also to the lower extremity of the breast portion 52, as by a machine screw 146. When air to the chest expansion device 140 is cut off, the piston rod 112 is preferably biased to normal position, as illustrated in the solid lines in FIG. 3, by the resilience of the outer covering 42. However, a tension spring may be connected between the cross

element 144 and the bird body 38 to increase the bias return force if desired.

The bird body 38 is tilted forwardly by a fluid-actuated body tilt device 148 substantially identical to the fluid-actuated devices previously described, like reference numerals again being used to designate the like components. The air cylinder 110 of the device 148 is pivotally secured to the T fitting 142, while the piston rod 112 thereof is pivotally connected to the upper ends of a pair of transversely spaced-apart leg extensions 150 by a transverse pin 152, as best viewed in FIG. 4.

The lower ends of the leg extensions 150 are rigidly secured by a pair of machine screws 154 to the legs 34 of the bird, and it will therefore be apparent that upon actuation of the body tilt device 148, the bird body 38 will be pivoted about the pin 152 and forced rearwardly, tilting the body and head downwardly and forwardly.

The control apparatus to initiate actuation of the solenoid 60 and the devices 106, 108, 124, 140, and 148 to effect vocalization and animation of the figure 10 is best illustrated in FIG. 11, and comprises a number of commercially available components well known to those skilled in the art. For brevity these components will not be described in detail, particularly since the particular construction of the individual components does not form a part of the present invention. The diagrammatic illustration of the control apparatus is important primarily to show the manner in which the various animation devices of the figure 10 are coordinated by derivation of their control signals from a common program source.

Thus, a tape recorder 156 having a pair of tape heads 158 and 160 is loaded with dual track magnetic tape, one track for the audio program and the other track for the animation control. In the present case, five superimposed frequencies are selected such that none of the frequencies constitutes a harmonic frequency of any of the other frequencies, and these frequencies are utilized as the control signals for animation of the figure 10.

The audio program is provided by the tape head 158, and its output is applied to a conventional preamplifier 162 which is coupled to an amplifier 164. The output of the amplifier 164 is utilized both to drive a loudspeaker 166 and also to energize the coil of the solenoid 60, rectification or smoothing of the signal being afforded by any suitable means, as at 168.

The normal variation in signal amplitude which occurs in an audio program is sufficient to operate the solenoid 60 and hence the beak portion 48, the beak opening with the higher amplitudes and closing with the smaller amplitudes. In the event that both musical and speech portions are to be combined on the same program, and the beak is not to be animated during the musical interludes, the tape head 158 preferably is replaced by a pair of tape heads and a corresponding pair of magnetic tracks substituted for the single audio track. The music track can then be amplified and fed to the speaker for the musical program, and the other or speech track separately amplified and fed to the solenoid 60 to operate the bird beak.

The output of the animation control tape head 160 is fed to a conventional amplifier 170 whose output is further amplified by an amplifier 172. The output of the amplifier 172 is fed to five frequency-sensitive or frequency discriminating devices, preferably constituted by five conventional reed relays 174. As is well known, the conventional reed relay is tuned to resonate at a particular frequency, each of the reed relays 174 being tuned to a separate one of the five frequencies applied to the magnetic track of the tape head 160. When one of the reed relays is subjected to its particular frequency, it passes intermittent current to a current smoothing condenser, and the resultant signal is utilized, in the present case, to energize the coil of a sensitive control relay 176, a separate relay 176 being coupled to each of the reed relays 174.

Actuation of one of the control relays 176 is operative to energize the solenoid of a conventional solenoid-actuated air valve 178 to permit air to pass from a compressed air source (not shown) to the associated fluid-actuated devices. An air valve 178 is associated with each of the fluid-actuated devices 106, 108, 124, 140, and 148 so that the latter are separately or collectively actuatable, according to the air valves which are operated.

With this arrangement, the program source material on the magnetic tape is utilized to coordinate the audio program and the beak, head, body, and chest expansion movements of the bird. The manner of preparing the magnetic tape program material is not a part of the present invention, but it will be apparent that the animation movements are easily keyed to the audio portion of the program by selectively applying, from appropriate signal generators, frequencies productive of the movements desired. Thus, for example, a particular frequency can be applied to the tape to effect expansion of the bird's breast just prior to anticipated opening of the bird's beak. Likewise, a particular frequency can be applied to the tape to produce a tilting of the bird's body when the bird is supposed to address its remarks or singing to someone located below its perch.

It will also be apparent that by suitable amplification of the outputs of the two amplifiers 164 and 172 a number of the figures 10 can be actuated in unison to provide a "chorus" of singing or speaking birds. Since all of the program material is carried on magnetic tape the operation of the bird or birds can be made completely automatic, and the birds' performance repeated as required.

Although it is possible to utilize fluid-actuated devices of the hydraulic type, the use of air-operated devices is preferable to avoid problems often associated with fluid leakage. Moreover, the exhaustion of air on piston return to its normal or unactuated position is simplified since it may be exhausted to atmosphere, as will be apparent. In addition, the rapidity of each of the movements of the figure is easily adjusted and regulated by adjusting the pressure or rate of flow of the air to each of the individual devices so that, for example, turns of the head can be relatively abrupt while tilting of the body can be made more gradual, affording an overall animation which is strikingly life-like.

In addition, various arrangements of beak actuators may be used instead of the electromagnetic actuator or solenoid 60 and the associated components illustrated in FIG. 1. For example, in FIG. 8 there is illustrated a solenoid 180 identical to solenoid 60 except that the core thereof is fixed and when energized repels a permanent magnet 182 fixed to the pivotally mounted lower beak portion 48 by an arm 184. This is accomplished by juxtaposition of like poles of the magnet 182 and the solenoid core so that repulsion of the magnet 182 upon energization of the solenoid 180 pivots the beak portion 48 to an open position. The weight of the magnet 182 returns the beak portion 48 to a closed position when the solenoid 180 is de-energized.

Another beak actuator arrangement is illustrated in FIG. 9. A solenoid 186 is utilized which is identical to the solenoid 180, the core thereof being fixed. Energization of the solenoid 186 attracts one extremity of a link arm 188 located adjacent the lower end of the solenoid core, the opposite end of the arm 188 being fixed to the pivotally mounted beak 48 so that the beak 48 is pivoted downwardly to an open position when the solenoid 186 is energized. Upon de-energization of the solenoid 186, the weight of the link arm 188 pivots the beak 48 upwardly to its closed position.

In FIG. 10 the beak 48 is opened by a fluid-actuated device constituted by an air cylinder 190, which acts through a link 68 and a spring link 70 identical to that illustrated in FIG. 1. In addition, an identical spring 72 is utilized to bias the beak 48 to its closed position. The air cylinder 190 is actuated by air under pressure in a manner identical to that of the previously described de-

vices 106, 108, 124, 140, and 148, but has certain disadvantages compared to an electromagnetic actuator. The latter is much more responsive and adapted to electrical modulation. However, where the beak 48 is relatively heavy the air cylinder 190 is useful.

Various modifications and changes may be made with regard to the foregoing detailed description without departing from the spirit of the invention or the scope of the following claims.

We claim:

1. An animated figure comprising:

a head having a pivotally mounted mouth portion;
a hollow body including a pair of legs normally fixed in position;

a head support mounting said head and supported by said body for pivotal movement about a pair of axes;
first means connected between said body and said head support and actuatable to pivot said head support about one of said axes to turn said head;

second means connected between said body and said head support and actuatable to pivot said head support about the other of said axes to tilt said head;

third means connected between said body and said legs and actuatable to tilt said body;

a multi-frequency signal source providing an audio and animation program;

and operating means operative to selectively pivot said mouth portion and actuate said first, second and third means, respectively, and including frequency-sensitive means responsive to separate frequencies of said source to effect separate operation of said first, second, and third means by said operating means to thereby selectively or collectively animate said head and said body in an integrated manner and according to the character of said animation program.

2. An animated figure comprising:

a head;
a hollow body including a pair of legs normally fixed in position;

a head support mounting said head and supported by said body for pivotal movement about a pair of axes;

first cylinder means connected between said body and said head support and operable by fluid under pressure to pivot said head support about one of said axes to turn said head;

second cylinder means connected between said body and said head support and operable by fluid under pressure to pivot said head support about the other of said axes to tilt said head;

a multi-frequency signal source providing an animation program;

and cylinder operating means operative to selectively couple a supply of fluid under pressure to said first and second means, respectively, and including frequency-sensitive means responsive to separate frequencies of said source to effect separate operation of said first and second cylinder means by said operating means to thereby selectively turn and tilt said head according to the character of said animation program.

3. An animated figure comprising:

a head;
a hollow body including a pair of legs normally fixed in position;

a head support mounting said head and supported by said body for pivotal movement about a pair of axes;

first cylinder means connected between said body and said head support and operable by fluid under pressure to pivot said head support about one of said axes to turn said head;

second cylinder means connected between said body and said head support and operable by fluid under pressure to pivot said head support about the other of said axes to tilt said head;

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third cylinder means connected between said body and said legs and operable by fluid under pressure to tilt said body;

a multi-frequency signal source providing an animation program;

and cylinder operating means operative to selectively couple a supply of fluid under pressure to said first, second, and third cylinder means, respectively, and including frequency-sensitive means responsive to separate frequencies of said source to effect separate operation of said first, second, and third cylinder means by said operating means to thereby selectively or collectively animate said head and said body in an integrated manner and according to the character of said animation program.

4. An animated figure comprising:

a head;

a hollow body including a breast portion and a pair of legs normally fixed in position;

a head support mounting said head and supported by said body for pivotal movement about a pair of axes;

first cylinder means connected between said body and said head support and operable by fluid under pressure to pivot said head support about one of said axes to turn said head;

second cylinder means connected between said body and said head support and operable by fluid under pressure to pivot said head support about the other of said axes to tilt said head;

third cylinder means connected between said body and said legs and operable by fluid under pressure to tilt said body;

fourth cylinder means connected between said body and said breast portion and operable by fluid under pressure to outwardly bow said breast portion to an expanded position;

a multi-frequency signal source providing an animation program;

and cylinder operating means operative to selectively couple a supply of fluid under pressure to said first, second, third, and fourth cylinder means, respectively, and including frequency-sensitive means responsive to separate frequencies of said source to effect separate operation of said first, second, third, and fourth cylinder means by said operating means to thereby selectively or collectively animate said head and said body in an integrated manner and according to the character of said animation program.

5. An animated figure comprising:

a hollow body;

an elongated, articulated breast portion hingedly secured at one extremity to said body and slidable over said body adjacent its opposite extremity;

operating means connected between said body and said opposite extremity of said breast portion and actuable to slide said breast portion over said body and outwardly bow said breast portion to an expanded position;

a multi-frequency signal source providing an animation program;

and means responsive to a predetermined frequency signal from said source to actuate said operating means.

6. An animated figure comprising:

a hollow body;

an elongated, articulated breast portion hingedly secured at one extremity to said body and slidable over said body adjacent its opposite extremity;

operating means connected between said body and said opposite extremity of said breast portion and actuable to slide said breast portion over said body and outwardly bow said breast portion to an expanded position;

a multi-frequency signal source providing an animation program;

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a resilient outer covering stretched over said body and said breast portion and tending to bias said body and said breast portion inwardly to a collapsed position;

and means responsive to a predetermined frequency signal from said source to actuate said operating means.

7. An animated figure comprising:

a head having a pivotally mounted mouth portion;

a hollow body;

an elongated, articulated breast portion hingedly secured at one extremity to said body and slidable over said body adjacent its opposite extremity;

operating means connected between said body and said opposite extremity of said breast portion and actuable to slide said breast portion over said body and outwardly bow said breast portion to an expanded position;

a head support mounting said head and supported by said body;

mouth pivot means connected between said mouth portion and a relatively fixed portion of said head and actuable to pivot said mouth portion;

a signal source providing an audio and animation program;

and means coupled to said source and operative to sequentially actuate said operating means and said mouth pivot means in response to said program to coordinate movements of said mouth and breast portions.

8. An animated figure comprising;

a head;

a hollow body including a breast portion and a pair of legs normally fixed in position;

a head support mounting said head and supported by said body for pivotal movement about a pair of axes;

first cylinder means connected between said body and said head support and operable by fluid under pressure to pivot said head support about one of said axes to turn said head;

second cylinder means connected between said body and said head support and operable by fluid under pressure to pivot said head support about the other of said axes to tilt said head in a first direction;

third cylinder means connected between said body and said legs and operable by fluid under pressure to tilt said body;

fourth cylinder means connected between said body and said breast portion and operable by fluid under pressure to outwardly bow said breast portion to an expanded position;

a resilient outer covering stretched over said head and said body and tending to bias said head away from said first direction and tending to bias said breast portion inwardly to a collapsed position;

a multi-frequency signal source providing an animation program;

and cylinder operating means operative to selectively couple a supply of fluid under pressure to said first, second, third, and fourth cylinder means, respectively, and including frequency-sensitive means responsive to separate frequencies of said source to effect separate operation of said first, second, third, and fourth cylinder means by said operating means to thereby selectively or collectively animate said head and said body in an integrated manner and according to the character of said animation program.

9. An animated figure comprising:

a head;

a hollow body including a pair of legs normally fixed in position;

a head support mounting said head and supported by said body for turning movement;

a pair of cylinder means connected between said body and said head support and operable by fluid under pressure to turn said head, one of said cylinder

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means turning said head in one direction and the other of said cylinder means turning said head in an opposite direction;

a multi-frequency signal source providing an animation program;

and cylinder operating means operative to selectively couple a supply of fluid under pressure to said pair of cylinder means, respectively, and including frequency-sensitive means responsive to separate frequencies of said source to effect separate operation of said pair of cylinder means by said operating means to thereby selectively turn said head in opposite directions according to the character of said animation program.

10. An animated figure comprising:

a head having a pivotally mounted mouth portion;

a hollow body including a pair of legs normally fixed in position;

a head support mounting said head and supported by said body for pivotal movement about a pair of axes;

electromagnetic actuating means responsive to an audio signal to pivot said mouth portion;

first means connected between said body and said head support and actuated to pivot said head support about one of said axes to turn said head;

second means connected between said body and said head support and actuated to pivot said head support about the other of said axes to tilt said head;

third means connected between said body and said legs and actuated to tilt said body;

a multi-frequency signal source providing an audio and animation program;

and operating means operative to apply the audio portion of said source to said electromagnetic actuating means and further operative to selectively actuate said first, second and third means, respectively, and including frequency-sensitive means responsive to separate frequencies of said source to effect separate operation of said first, second, and third means by said operating means to thereby selectively or collectively animate said head and said body in an integrated manner and according to the character of said animation program.

11. An animated figure comprising:

a head having a pivotally mounted mouth portion;

bias means tending to urge said mouth portion to a closed position;

a hollow body including a pair of legs normally fixed in position;

a head support mounting said head and supported by said body for pivotal movement about a pair of axes;

electromagnetic actuating means including a core and energizable in response to an audio signal to move said core;

link means connecting said core and said mouth portion to pivot said mouth portion to an open position upon energization of said electromagnetic actuating means;

first means connected between said body and said head support and actuable to pivot said head support about one of said axes to turn said head;

second means connected between said body and said head support and actuable to pivot said head support about the other of said axes to tilt said head;

third means connected between said body and said legs and actuable to tilt said body;

a multi-frequency signal source providing an audio and animation program;

and operating means operative to couple the audio portion of said source to said electromagnetic actuating means, and further operative to selectively actuate said first, second and third means, respectively, and including frequency-sensitive means re-

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sponsive to separate frequencies of said source to effect separate operation of said first, second, and third means by said operating means to thereby selectively or collectively animate said head and said body in an integrated manner and according to the character of said animation program.

12. An animated figure comprising:

a head having a pivotally mounted mouth portion;

a hollow body including a pair of legs normally fixed in position;

a head support mounting said head and supported by said body for pivotal movement about a pair of axes;

electromagnetic actuating means including a fixed core and energizable in response to an audio signal to magnetize said core;

a permanent magnet mass secured to said mouth portion and located adjacent said core with a pole thereof adjacent a like pole of said core whereby energization of said electromagnetic actuating means repels said mass to pivot said mouth portion, said mass having a weight sufficient to oppositely pivot said mouth portion in the absence of said energization;

first means connected between said body and said head support and actuable to pivot said head support about one of said axes to turn said head;

second means connected between said body and said head support and actuable to pivot said head support about the other of said axes to tilt said head;

third means connected between said body and said legs and actuable to tilt said body;

a multi-frequency signal source providing an animation program;

and operating means operative to couple the audio portion of said source to said electromagnetic actuating means, and further operative to selectively actuate said first, second and third means, respectively, and including frequency-sensitive means responsive to separate frequencies of said source to effect separate operation of said first, second, and third means by said operating means to thereby selectively or collectively animate said head and said body in an integrated manner and according to the character of said animation program.

13. An animated figure comprising:

a head having a pivotally mounted mouth portion;

a hollow body including a pair of legs normally fixed in position;

a head support mounting said head and supported by said body for pivotal movement about a pair of axes;

electromagnetic actuating means energizable in response to an audio signal to pivot said mouth portion;

first air cylinder means connected between said body and said head support and operable by air under pressure to pivot said head support about one of said axes to turn said head;

second air cylinder means connected between said body and said head support and operable by air under pressure to pivot said head support about the other of said axes to tilt said head;

third air cylinder means connected between said body and said legs and operable by air under pressure to tilt said body;

a multi-frequency signal source providing an audio and animation program;

means coupled to said source for applying the audio portion thereof to said electromagnetic actuating means;

and air cylinder means operative to selectively couple a supply of air under pressure to said first, second and third air cylinder means, respectively, and including solenoid air valves and frequency-sensitive reed relays responsive to separate frequencies of said source to energize separate ones of said solenoid air valves for coupling air under pressure to said first, second, and third air cylinder means, re-

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spectively, to thereby selectively or collectively animate said head and said body in an integrated manner and according to the character of said animation program.

14. An animated figure comprising: 5
- a head having a pivotally mounted mouth portion;
- a hollow body including a pair of legs normally fixed in position;
- a head support mounting said head and supported by said body for pivotal movement about a pair of 10 axes;
- electromagnetic actuating means energizable in response to an audio signal to pivot said mouth portion;
- first air cylinder means connected between said body and said head support and operable by air under 15 pressure to pivot said head support about one of said axes to turn said head;
- second air cylinder means connected between said body and said head support and operable by air under pressure to pivot said head support about the other 20 of said axes to tilt said head;
- third air cylinder means connected between said body and said legs and operable by air under pressure to tilt said body;
- a tape recorder having a pair of tape heads for accom- 25 modating a magnetic tape having at least a pair of

tracks, one of said tracks embodying an audio program and the other of said tracks embodying a multi-frequency animation program;

means coupled to one of said tape heads to apply said audio program to said electromagnetic actuating means;

and air cylinder operating means coupled to the other of said tape heads and operative to selectively couple a supply of air under pressure to said first, second and third air cylinder means, respectively, and including frequency-sensitive means responsive to separate frequencies of said animation program to effect separate operation of said first, second, and third air cylinder means to thereby selectively or collectively animate said head and said body in an integrated manner and according to the character of said animation program.

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