

[54] FACIAL ANIMATING MEANS FOR A FIGURE TOY

3,237,344 3/1966 Ostrander 46/95
R19,657 7/1935 Bowers 46/135

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[58] Field of Search 46/116, 117, 118, 120, 46/135, 171, 135 A

[56] References Cited

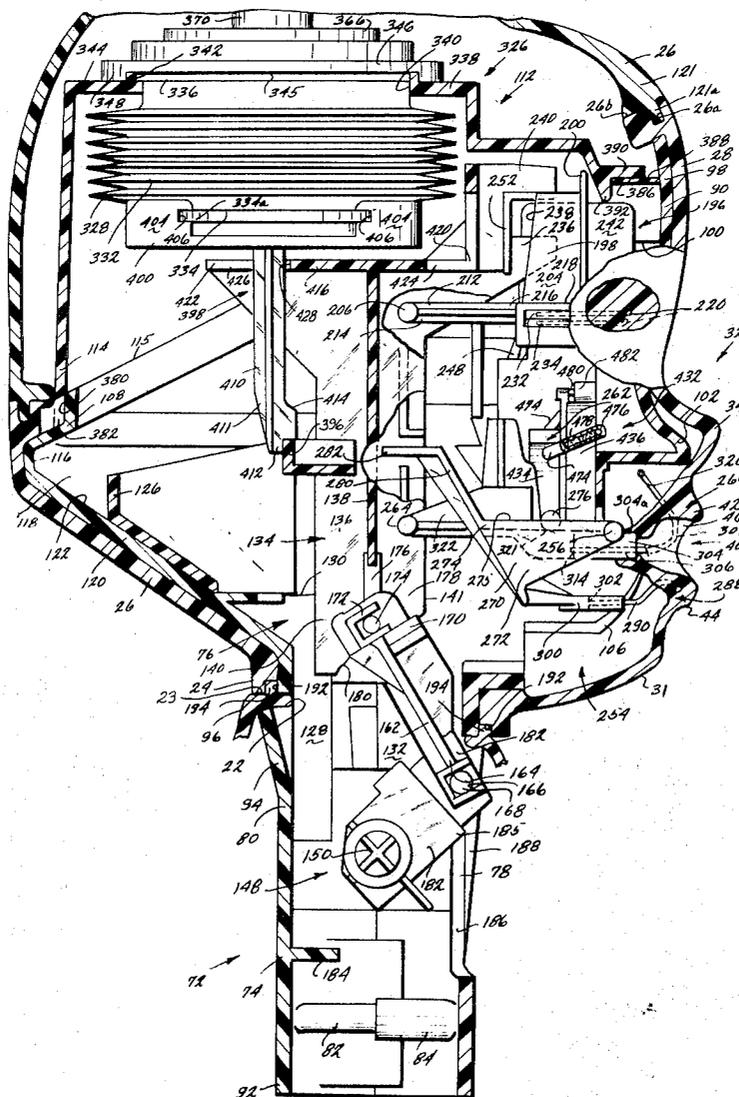
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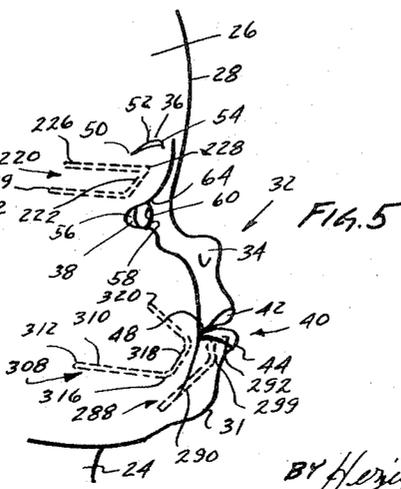
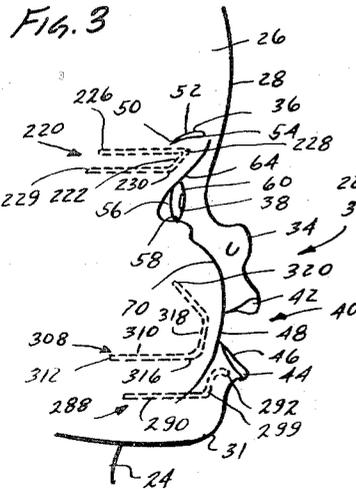
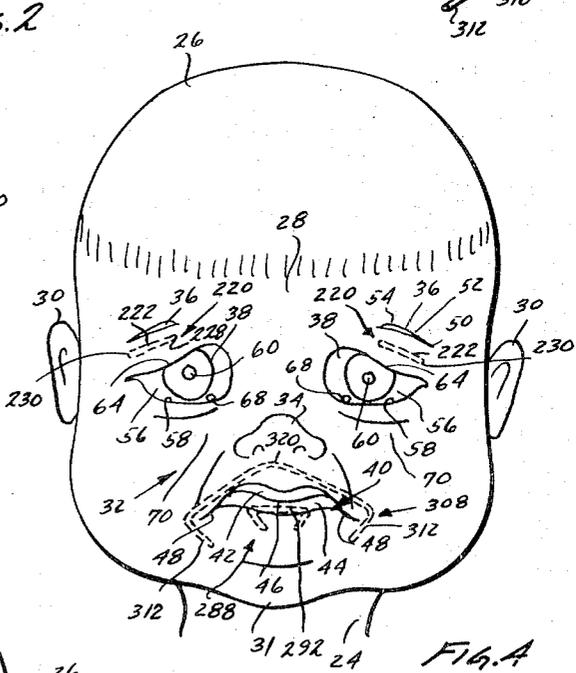
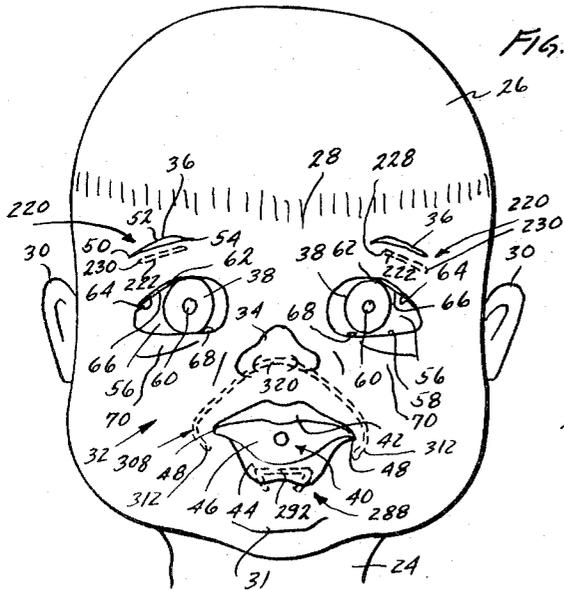
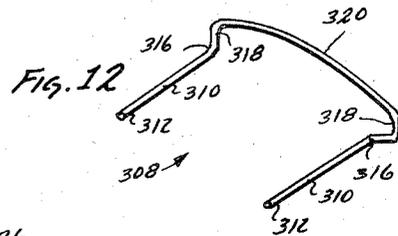
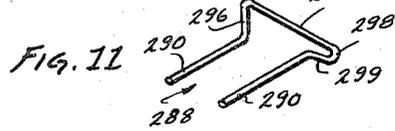
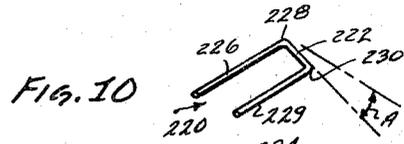
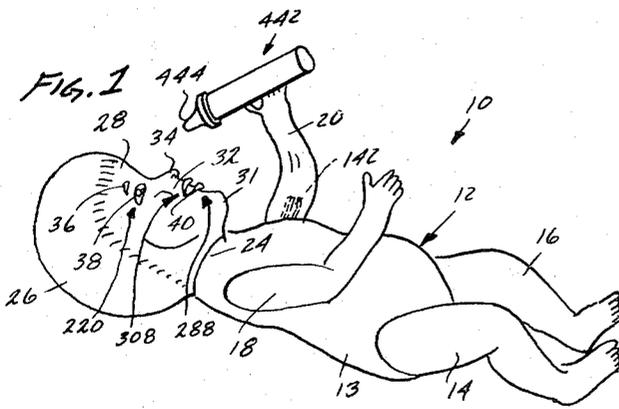
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[57] ABSTRACT

A doll wherein moving one of the doll's arms actuates mechanism to change the doll's facial expression from a smile to a sad or crying look. The mechanism includes means for moving the lower lip relative to the mouth corners from a smiling position where the central portion of the lower lip is below the mouth corners to a sad position where that central portion is above the mouth corners and jutting somewhat forwardly. The mechanism also includes means for moving the eyebrows downwardly to a scowl position and for ejecting simulated tears from the eyes, after mouth movement toward the sad position has started. Sounding means are also actuated, at about the time the sad expression is achieved, to simulate a small child crying.

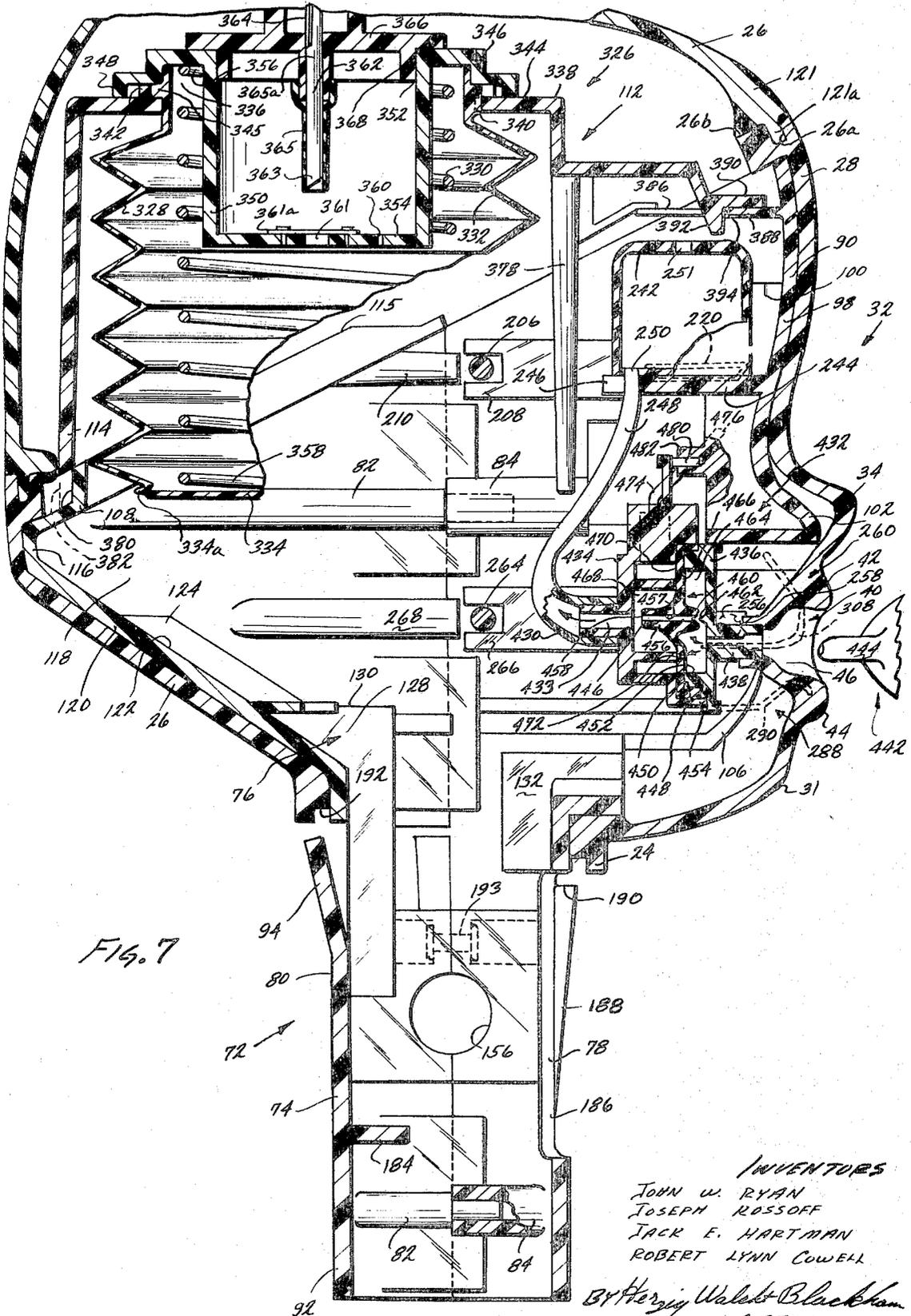
12 Claims, 12 Drawing Figures





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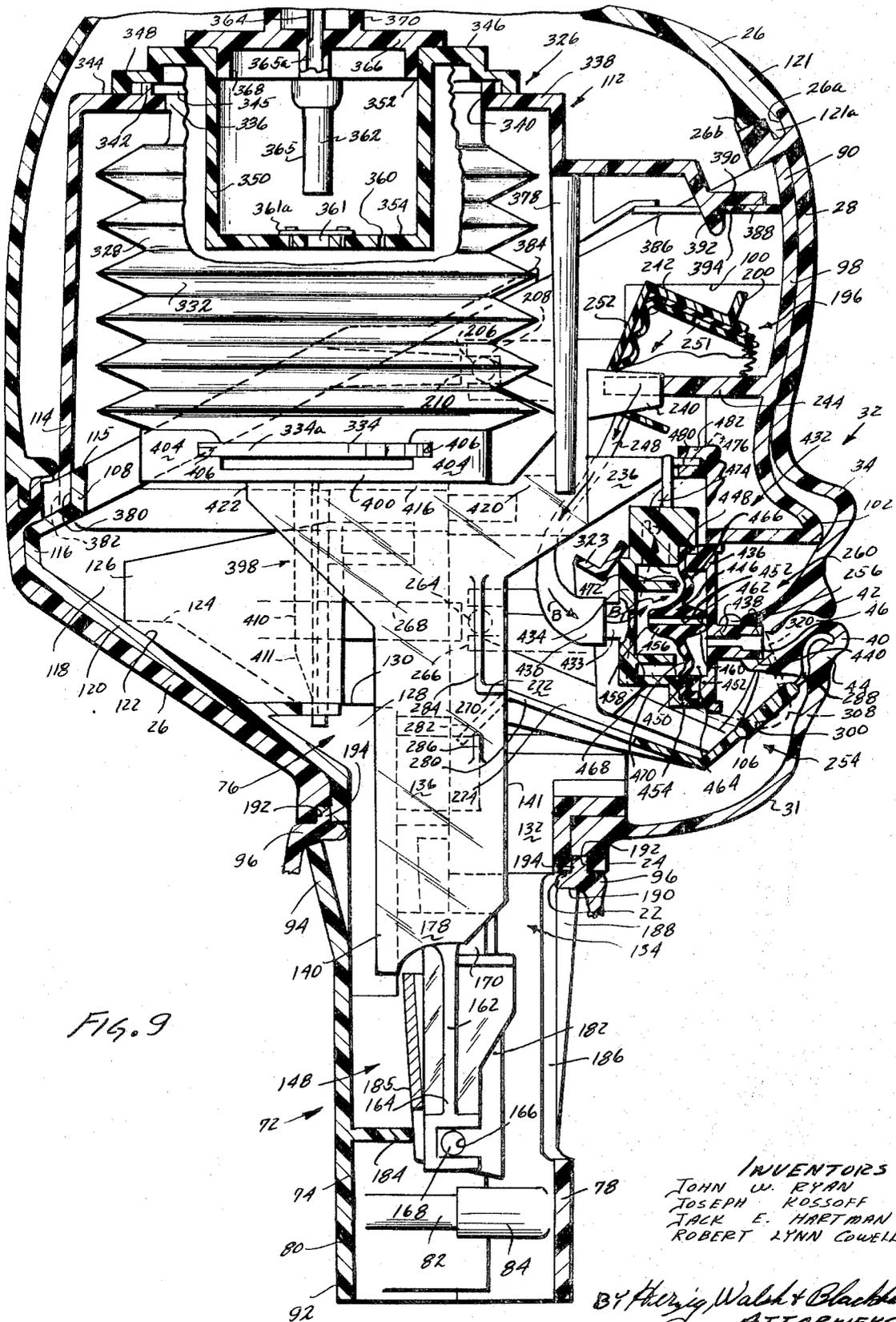


Fig. 9

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FACIAL ANIMATING MEANS FOR A FIGURE TOY

This application is a continuation of application Ser. No. 544,420, filed Apr. 22, 1966, now abandoned.

This invention relates to new and useful animating means for a figure toy and more particularly to a new and useful crying doll having facial animating means, tearing means and noisemaking means.

A number of different types of crying dolls are available which have facial animating means, tearing means and noise-making means. While generally satisfactory, some types of these dolls do have certain disadvantages.

A disadvantage with one type resides in the fact that the tearing means and the noisemaking means are actuated simultaneously with the facial animating means so that simulated tears start flowing from the doll's eyes and a crying sound commences before the facial animating means gives the doll a crying expression.

A disadvantage with another type of prior art crying doll resides in the fact that the simulated tears issue from the doll's eyes in a stream minimizing the illusion of tears. Another type of prior art crying doll seeks to overcome this disadvantage by providing the doll with eye sockets in which simulated eyes are mounted with sufficient clearance so that the sockets may be squeezed about the eyeballs in such a manner that tears are caused to well from the space between the sockets and the eyeballs. While perhaps an improvement, even though the time lag between expression change and tears is not significantly increased, this type of crying doll has the disadvantage that relatively complicated molding techniques and close tolerances must be employed to form the sockets. Another disadvantage resides in the fact that water becomes trapped in the space between the socket and the eyeball when the doll is not in use.

A major disadvantage with all prior art crying dolls resides in the fact that the means employed to change the facial expression of the doll from a happy expression to a crying expression imparts a somewhat artificial look to the doll when actuated.

In view of the foregoing factors and conditions characteristic of crying dolls having facial animating means, tearing means and noisemaking means, it is a primary object of the present invention to provide a new and useful animating means for a figure toy not subject to the disadvantages enumerated above and having a mechanism especially designed for changing the facial expression of a doll in timed relation with the actuation of tearing means and means simulating crying sounds efficiently, expeditiously and safely.

Other objects of the present invention are to provide a delayed-action noisemaking means for a crying doll, and delayed-action weeping means for a doll.

Yet another object of the present invention is to provide new and useful animating means for changing the facial expression of a doll from a happy expression to a sad expression which includes eyebrow animating means, mouth animating means and actuator means connected to the eyebrow animating means and the mouth animating means.

A further object of the present invention is to provide a new and useful means for supplying simulated tears to the eyes of a figure toy.

A still further object of the present invention is to provide mouth animating means for changing the facial

expression of a doll by pulling the corners of the doll's mouth downwardly while moving its lower lip slightly upwardly and forwardly.

According to the present invention, a facial animating means is provided in combination with a figure toy having a head including a flexible plastic face having integrally formed, simulated nose, eyebrow, eye and mouth portions. The mouth portion includes an upper portion defining an upper lip and a lower portion defining a lower lip. The upper and lower lips are joined together by an inwardly extending portion in such a manner that the mouth portion includes a pair of corner portions defining the width of the mouth.

The animating means includes eyebrow animating means connected to the eyebrow portions for pulling at least a portion of the eyebrow portions downwardly toward an associated eye portion to simulate frowning when the eyebrow animating means is actuated. The facial animating means also includes mouth animating means connected to the mouth portion for pulling the corner portions downwardly while moving the lower lip portion slightly upwardly and outwardly when the mouth animating means is actuated by an actuator means. The actuator means is connected to both the mouth animating means and the eyebrow animating means for operating them simultaneously. The mouth animating means includes a U-shaped clip having a bight portion embedded in the lower lip to follow the curvature thereof. The arms of the clip are then connected to the actuator means which swings the bight portion slightly outwardly and upwardly when the actuator means is actuated. U-shaped clips are also employed to pull the corners of the mouth downwardly and to pull the eyebrow portions downwardly. These latter U-shaped clips being similarly connected to separate actuators.

In addition, a conventional, bellows-type noisemaker is used to imitate a crying sound when the animating means is actuated. The actuator means collapses the bellows against the bias of its compression spring when the actuator means is moved to a first position giving the doll a happy expression. The compression spring is retained in a compressed condition by a stop member. When the actuator means is moved downwardly to actuate the eyebrow and mouth animating means, the actuator means dislodges the stop member near the end of the animating stroke so that the noise is not produced until the facial expression of the doll has changed from the happy expression to a sad expression. In addition, as the actuator means nears the end of its animating stroke, a squeeze bulb containing water is depressed by the eyebrow animating means causing water to flow through a conduit means to a duct provided in fluid communication with each eye. Flow restricting means is provided in the ducts to restrict the flow of water in such a manner that it oozes from the eyes to simulate tears.

The eyebrow animating means, the mouth animating means, the actuator means, the noisemaking means and the tear simulating means are all mounted in a compact frame including a skull portion, which is mounted inside the doll's head.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may best be un-

derstood by reference to the following description, taken in connection with the accompanying drawings in which like reference characters refer to like elements in the several views.

IN THE DRAWINGS

FIG. 1 is a perspective view of a figure toy in which a new and useful animating means of the present invention is employed;

FIG. 2 is a front elevational view of the head portion of the figure toy of FIG. 1 showing somewhat schematically the relative positions of certain portions of the animating means when the figure toy exhibits a happy expression;

FIG. 3 is a partial, side elevational view similar to FIG. 2;

FIG. 4 is a front elevational view similar to FIG. 2, but showing the relative locations of certain portions of the animating means when the figure toy exhibits a sad expression;

FIG. 5 is a partial, side elevational view similar to FIG. 4;

FIG. 6 is an exploded perspective view of the doll head shown in FIG. 2 showing all of the parts which may be mounted therein;

FIG. 7 is an enlarged, cross sectional view, with parts broken away to show internal construction, showing the various elements of FIG. 6 in assembled relation in the head;

FIG. 8 is an enlarged, cross sectional view similar to FIG. 7 with the addition of an animating actuator means showing the relative positions of the various parts when the figure toy is given a happy expression;

FIG. 9 is an enlarged, cross sectional view similar to FIG. 8, showing the relative positions of the various parts when the doll is given a sad expression;

FIG. 10 is an enlarged, perspective view of a U-shaped clip employed in the figure toy of FIG. 1 to connect one of the eyebrows thereof to an eyebrow animating means;

FIG. 11 is an enlarged, perspective view of a U-shaped clip employed to animate the lower lip of the figure toy of FIG. 1; and

FIG. 12 is an enlarged, perspective view of a U-shaped clip employed to pull the corners of the mouth of the doll of FIG. 1 downwardly, as shown in FIG. 4.

The present invention will be described for purposes of illustration, but not of limitation, in combination with a doll. It is to be understood, however, that the animating means of the present invention may find equal application in figure toys of other types.

Referring again to the drawings, a doll constituting a presently preferred embodiment of the invention, generally designated 10, includes a hollow body unit 12 having a torso 13 and a head 26. To the torso 13, right and left leg members 14 and 16 and right and left arm members 18 and 20, respectively, are swingably connected. The torso 13 is provided with a neck opening 22 (FIG. 8) formed by an annular shoulder 23 which is encompassed by a neck portion 24 forming an integral part of the head 26.

The head 26 may be made from any soft, flexible, thermoplastic material, such as plastisol and includes a forehead 28, a pair of ears 30, a chin 31 and a face 32. The face 32 is provided with integrally formed, simu-

lated, nose, eyebrow, eye and mouth portions 34, 36, 38 and 40, respectively. The mouth portion 40 includes an upper portion 42 forming an upper lip, a lower portion 44 forming a lower lip, and an inwardly extending portion 46 joining the upper and lower portions together in such a manner that the mouth portion 40 includes a pair of corner portions 48 defining the width of the mouth portion 40. The simulated eyebrow portions 36 each includes a lower portion 50, a central portion 52 and an upper portion 54.

The cost of forming each eye 38 is minimized by dispensing with eye sockets in which eyeballs are mounted. This is accomplished by forming an outwardly convex back wall 56 as an integral part of a simulated eye opening 58 during a single molding operation which forms the head 26. A simulated eyeball 60 may then be painted on the back wall 56. Also, during the molding operation, the outer surface of the face 32 is scored, as indicated at 62 in FIG. 2, along a simulated eyelid 64 adjacent the upper edge 66 of the opening 58 to facilitate rolling the eyelid 64 downwardly over a portion of the back wall 56 when the eyebrows 36 are animated in a manner to be hereinafter described in detail. An aperture 68 is provided in the wall 56 at the bottom of each eye 38 through which simulated tears may flow upon actuation of an animating means to be hereinafter described.

The face 32 may be given a normally pleasing expression by molding the mouth 40 in such a manner that it takes a normal set in an open position with the corners 48 curved slightly upwardly and by forming the face 32 in such a manner that a well pronounced cheek area 70 extends from a point adjacent the nose portion 34 back to an associated eye 38.

The head 26 is mounted on, and operatively connected to, an animating means 72 comprising a frame 74 in which an animating mechanism 76 is mounted. The frame 74 includes a front frame portion 78 and a rear frame portion 80 each of which may be manufactured from a comparatively rigid plastic material employing well known molding techniques. The frame portions 78 and 80 may be assembled together by engaging a plurality of suitable pins 82, provided on the frame portion 80, into associated, cylindrical, hollow bosses 84, provided on the frame portion 78. When thus assembled, the frame 74 includes an upper skull portion 90, adapted to support the head 26, and a lower, cylindrical portion 92, adapted to pass through the neck opening 22 (FIG. 8) in the torso 13 for connecting the head 26 thereto. The neck portion 24 of head 26 is retained in position on shoulder 23 by engaging a plurality of outwardly-struck tab members 94, which are provided on the cylindrical member 92, under an annular flange 96 formed in the torso 13 at the neck opening 22.

The portion of the skull 90 which is formed by the front frame portion 78 includes a forehead engaging portion 98, a pair of eye openings 100, a nose-engaging portion 102, a pair of cheek-engaging portions 104 and a mouth opening 106. The portion of the skull 90 formed by the rear frame portion 80 includes a U-shaped upper platform 108 for supporting a noisemaker housing 112. The noisemaker housing 112 includes a lower edge portion 114 which may be retained in position on the U-shaped shelf 108 by an upstanding U-shaped flange 115. The portion of the skull 90 formed by the rear frame portion 80 also includes a

sidewall 116 depending from the shelf 108 and having a pair of substantially flat portions 118 lending support to the head 26 in the vicinity of ears 30. The sidewall 116 also includes a downwardly and inwardly sloping portion 120 formed integrally with the flat portions 118 for supporting the rear portion of the head 26 to minimize the likelihood of the head 26 becoming deformed and to form a protective cage for the animating mechanism 76 in cooperation with the front frame portion 78. When the head 26 is mounted on the frame 74, the housing 112 may be covered by a plastic skull portion 121, (FIG. 6) having an annular flange 121a adapted to seat in an annular groove 26a encompassing the open top 26b of head 26.

The sloping portion 120 of sidewall 116 includes an inner surface 122 which is provided with a pair of parallel, spaced-apart ribs 124 formed integrally with the sidewall 116 during the molding operation. The ribs 124 retain a noisemaker-actuator guide 126 in position within the frame 74. A pair of parallel, spaced-apart ways 128 may be formed integrally with the ribs 124 during the molding operation and include upper ends 130 which are formed on the inner surface 122 in alignment with associated ribs 124. The ways 128 each extends from an associated end 130 downwardly inside the cylindrical member 92 and coact with similar ways 132, which are provided in the front frame portion 78, to guide an animator actuator means 134 during reciprocation thereof within the frame 74.

The actuator means 134 includes a body portion 136 which is shaped somewhat like an I-beam having a central web 138 and a pair of flanges 140. When the actuator means 134 is in operative position within the frame 74, the front portions 141 of the flanges 140 straddle the ways 132 and the rear portions of the flanges 140 straddle the ways 128 for guiding the actuator means 134 during reciprocation thereof.

The actuator means 134 may be reciprocated by a two part crank means consisting of an arm insert 142 having a first end 144 extending into the left arm 20 of the doll 10 and a second end 146 operatively connected to a rotating part 148. The rotating part 148 has a first pivot 150 rotatably mounted in a small aperture 152 provided in the cylindrical member 92 and a second pivot 154 rotatably mounted in a large aperture 156 provided in the cylindrical member 92. The second pivot 154 includes a central tang 158 which may be engaged by a bifurcated portion 160 provided on the end 146 of crank means 142 for operatively connecting it to the rotating part 148. The rotating part 148 may be connected to the actuator means 134 by a pitman 162 having a first end 164 provided with an aperture 166 engageable with a pin 168 carried by the rotating part 148 and a second end 170 provided with oppositely disposed, U-shaped hooks 172 which may be connected to a transverse pin 174 on opposite sides of a vertical pin 176 provided at the lower end 178 of the actuator means 134.

Since the end 178 of actuator means 134 is positionable closely adjacent the pivots 150 and 154, it is necessary to provide clearance between the end 178 and the rotating part 148. This is accomplished by forming an arcuate cut-out portion 180 in each flange 140 at the end 178. The crank means 142 reciprocates the actuator means 134 to the lower end of its stroke by rotating the rotating part 148 into a position overlying the pitman 162 wherein the pitman 162 is disposed be-

tween a pair of spaced-apart, parallel flanges 182 provided on the rotating part 148. The rotating part 148 is prevented from rotating past this position by a shelf member 184 which is provided in the cylindrical member 92 in the path of travel of the end 185 of the rotating part 148 which carries the pin 168. The end 185 is given clearance for rotating from the position adjacent shelf 184 to a position 180° therefrom by providing a rectangular opening 186 in the cylindrical member 92. The cylindrical member 92 is strengthened in the vicinity of the opening 186 by providing a vertically-extending flange 188 along each vertical edge of the opening 186. The upper end 190 of each flange 188 is engageable with the flange 96 on torso 13 for coacting with the outwardly struck tabs 94 to prevent upward displacement of the frame 74. Rotation of frame 74 is prevented by engaging a pair of protuberances 192 (FIG. 8), which are provided on the cylindrical member 92, in an associated notch 194 provided in the flange 96. Additionally, spreading apart of the frame portions 78 and 80 adjacent aperture 156 is prevented by a rivet 193 which engages hollow bosses 193a provided on the cylindrical member 92.

Reciprocation of the actuator means 134 operates the animating mechanism 76 which includes an eyebrow animator 196. The eyebrow animator 196 includes a central, U-shaped portion 198 having an upper bight portion 200 and a pair of downwardly and outwardly extending arms 204. The eyebrow animator 196 is swingably mounted in the frame 74 by a pair of outwardly extending pivots 206 each of which is seated in an associated, U-shaped bearing 208 formed in the frame portion 78 during the molding operation. Each pivot 206 is retained in position in an associated bearing 208 by an associated protuberance 210 formed on the frame portion 80 during the molding operation. Each pivot 206 is connected to the U-shaped portion 196 by an associated crank arm 212 (FIG. 6) having an end 214 which carries an associated pivot 206 and a second end 216 affixed to the lower end 218 of an associated arm 204.

The eyebrow animator 196 may be connected to the eyebrow portions 36 of the face 32 by any suitable means, which is shown herein for the purpose of illustration, but not of limitation, as comprising a U-shaped wire clip 220 (FIG. 10) having a bight portion 222 embedded in the inner wall 224 (FIG. 6) of the head 26 behind an associated eyebrow portion 36. The bight portion 222 may be embedded in the wall 224 by the apparatus and method disclosed in copending application Ser. No. 558,305 filed June 17, 1966 now U.S. Pat. No. 3,440,714, and may be located in any suitable position which pulls an associated eyebrow portion 36 somewhat downwardly causing an associated eyelid portion 64 to roll somewhat over an associated back wall 56 so that the face 32 is given a frowning and squinting expression. For example, the bight portion 222 may be located slightly below an associated eyebrow 36 along the portion thereof which extends from the end 50 to the mid-portion 52. Each clip 220 also includes an inner arm 226 extending from the end 228 of bight portion 222 and an outer arm 229 extending from the end 230 of bight portion 222. The bight portion 222 and the arms 226 and 229 are so dimensioned and configured that the bight portion 222 slopes somewhat inwardly from the end 228 to the end 230, as indicated by angle A in FIG. 10. Each clip 220 may be connected

to the eyebrow animator 196 by engaging the arms 226 and 229 in associated passageways 232 and 234, respectively, (FIGS. 6 and 8) provided in the end 216 of an associated arm 212. The passageway 234 is somewhat lower than the passageway 232 to facilitate embedding the bight portion 222 in the wall 224 on a suitable angle.

The openings 100 in the skull portion 90 provide operating room for the clips 220 during swinging movements of the animator 196 about pivots 206. The animator 196 is swung upwardly by sliding the actuator means 134 upwardly within the frame 74 and is swung downwardly by sliding the actuator means 134 downwardly within the frame 74. The actuator means 134 may slide a predetermined distance from its lower position toward its upper position without swinging the animator 196 and may be moved a predetermined amount from its elevated position toward its lowered position without swinging the animator 196 for a purpose to be hereinafter mentioned. This is accomplished by providing the actuator means 134 with a pair of lower fingers 236 engageable with the underside 238 of the bight portion 200 on the animator 196 and a pair of upper fingers 240 engageable with the end 216 of associated crank arms 212 for upward and downward swinging of the animator 196, respectively. Thus, the amount the actuator means 134 may be moved within the frame 74 without swinging the animator 196 is determined by the relative vertical position of the fingers 236 and 240 in conjunction with the underside 238 and ends 216.

The animator means 72 also includes a balloon-type reservoir 242 which is mounted on a shelf member 244 provided in the frame 74 between the arms 204 of the animator 196. A notch 246 is provided on the shelf 244 providing clearance for a conduit 248 having a first end 250 connected to the reservoir 242. The reservoir 242 is adapted to receive and store water for supplying simulated tears to the eyes 36 when the reservoir 242 is collapsed by swinging the animator 196 downwardly with the bight portion 200 pressing downwardly on the reservoir 242 while it is held captive on the shelf 244 by the arms 204 and a depending tab 252 carried by the bight portion 200. The bight portion 200 is caused to press downwardly on the reservoir 242 when the animator 196 is swung downwardly by moving the actuator means 134 downwardly until the fingers 240 engage the ends 216 of crank arms 212. Thus, the actuator means 134 may be moved downwardly a predetermined amount before the reservoir 242 is collapsed. The reservoir 242 is vented to atmosphere through an aperture 251 provided in the top wall thereof. This aperture 251 is sealed by the surface 238 when arm 196 is driven down.

The animating mechanism 76 also includes a lower lip animator 254 which is swingably mounted in the mouth opening 106 by a pair of outwardly extending pivots 256 seated in associated U-shaped bearings 258 provided in the front frame portion 78 adjacent the mouth opening 106. The lower lip animator 254 forms a portion of a mouth animating means indicated generally at 260 and is retained in position in the frame portion 78 by a mouth-animating member 262 which also forms a portion of the mouth animating means 260 and which is swingably mounted in the frame portion 78 by a pair of outwardly extending pivots 264 seated in associated U-shaped bearings 266 provided in the frame portion 78 adjacent the mouth opening 106. The

pivots 264 are retained in seated position in an associated bearing 266 by an associated pin 268 provided on the rear frame portion 80. The lower lip animator 254 includes a body portion 270 to which each pivot 256 is connected by an associated arm 272 extending upwardly and forwardly from the upper surface 274 of the body portion 270 at substantially right angles thereto. Each arm 272 has an upper surface 275 and carries an inwardly extending pin 276 positioned intermediate an associated pivot 256 and the upper surface 274. The body portion 270 includes a pair of rearwardly extending arms 280 which straddle the actuator means 134. Each arm 280 includes a rearwardly and downwardly sloping end or tab 282 which is caged between associated upper and lower finger members 284 and 286 which, in turn, extend outwardly from the flanges 140 and are spaced sufficiently close together that swinging movement is imparted to the lower lip animator 254 without waiting for the actuator means 134 to move a predetermined amount, as is the case for the eyebrow animator 196.

The lower lip animator 254 may be connected to the lower lip 44 by a wire clip 288 (FIG. 11) which is somewhat U-shaped having a pair of arms 290 and an offset bight portion 292. The bight portion 292 has a first end 294 connected to an associated arm 290 by a first curved member 296 and a second end 298 connected to an associated arm 290 by a second curved member 299. The configuration and dimensions of the curved members 296, 299 and the bight portion 292 are such that the clip 288 follows the natural curvature of lower lip 44 when the bight portion 292 is embedded therein. The arms 290 may be connected to an upwardly and forwardly extending tab 300 on the body portion 270 by engaging each arm 290 in an associated passageway 302 provided in the tab 300. Downward movement of the actuator means 134 causes the upper finger members 284 to exert a downward force on the tabs 282 swinging the animator 254 counter clockwise on pivots 256, as viewed in FIG. 9. This swings the tab 300 outwardly and upwardly on an arcuate path causing the clip 288 to move the lip 44 slightly forwardly and upwardly. Simultaneously, the inwardly extending pins 276 exert a downward force on a pair of forwardly extending arms 304 which are carried by the member 262 and which straddle the tab 300 in the mouth opening 106. This downward force swings the member 262 clockwise on pivots 264. Thus, when the tab 300 is swung outwardly and upwardly by pushing the actuator means 134 downwardly, the arms 304 are swung downwardly carrying their free ends 306 on an arcuate path. Each end 306 is located slightly behind and is connected to an associated corner 48 of the mouth 40 by a wire clip 308 (FIG. 12) having a pair of spaced-apart, parallel arms 310. Each arm 310 has a free end 312 engageable in an associated passageway 314 provided in an associated end 306 of the arms 304. The clip arms 310 each have another end 316 including a curved, outwardly-flaring member 318 adapted to be embedded in an associated corner 48 of the mouth 40. The arms 310 are connected together by a curved member 320 having its ends connected to an associated members 318 and extending up over the upper lip 42 below the nose portion 34. When the arms 304 are swung downwardly by the pins 276, the outwardly-flaring members 318 pull the corners 48 of the mouth 40 downwardly while the lower lip 44 is being simulta-

nously moved slightly forwardly and upwardly. The combined effect of these movements is to position the portion of lower lip 44 which carries bight portion 292 in a plane lying above a substantially parallel plane passing through corners 48, as is clearly shown in FIGS. 4 and 5, for imparting a sorrowful, crying expression to the face 32.

When the actuator means 134 is moved upwardly in the frame 74, the lower finger member 286 immediately moves an associated tab 282 upwardly swinging the tab 300 downwardly and inwardly while the upper surfaces 275 of arms 272 push upwardly on a bearing surface 321 adjacent the arms 304 causing them to swing upwardly moving the corners 48 up toward a slight smiling position. Each arm 304 is connected by the bearing surface 321 to an associated arm 322 which connects an associated pivot 264 to a U-shaped member 323 forming an integral part of the mouth-animating member 262. The arms 304 extend forwardly at right angles to associated arms 322 so that the upper surface 304a of each arm 304 forms a working surface for an associated pin 276. Since the finger members 284 and 286 start moving the tabs 282 without delay upon movement of the actuator means 134 the mouth 40 starts changing expression before the eyebrows or the reservoir are actuated because of the predetermined movement of the actuator means 134 which takes place before the fingers 236 and 240 move their associated parts.

The animating mechanism 76 also includes a noisemaker 326 which is mounted in the housing 112 in the upper portion of the head 26. The noisemaker 326 may be any of the conventional, well known noisemakers of the bellows type wherein a bellows 328 is compressed, in a manner to be hereinafter described, to load a compression spring 330 which expands the bellows 328 upon removal of the compressing force. The bellows 328 includes the usual convoluted sidewall 332, a closed bottom wall 334 and an open top 336.

The housing 112 includes a top wall 338 which is provided with an aperture 340 surrounded by an annular rib 342 provided on the upper surface 344 of the top wall 338. The open top 336 of the bellows 328 extends up through the aperture 340 and is retained in position by an annular rib 345 which engages the top wall 338 adjacent the rib 342. A cap member 346 closes the open top 336 of the bellows 328 and is preferably sealed thereto by sonic welding techniques. The cap member 346 includes a depending, annular flange 348 which encompasses the annular rib 342 and a depending, hollow, cylindrical member 350 having an open top 352 and a closed bottom wall 354. The cylindrical member 350 extends downwardly into the bellows 328 and is encompassed by the spring 330 which, in turn, has an end 356 bearing against the cap member 346 and another end 358 bearing against the end wall 334 of bellows 328. The bottom wall 354 is provided with a small aperture 360 permitting the bellows 328 to draw air into the cylindrical member 350 for actuating a reed-type sounder 362. Since reed-type sounders work within a given range of pressure, the size of the aperture 360 and the force of spring 330 are both selected in such a manner that the bellows 328 will expand at a suitable, comparatively slow rate to produce a desired sound. The bottom wall 354 is also provided with a large aperture 361 which is normally closed by a check valve 361a for facilitating the rapid collapsing

of the bellows 328 by the unseating of the valve 361a so that air within the bellows 328 may be rapidly exhausted through aperture 361 and sounder 362. The sounder 362 includes a body portion 363 which extends into the cylindrical member 350 and a reed 364 which is positioned outside the cylindrical member 350. A heat-shrinkable plastic sleeve 365 supports the body portion 363 by frictionally engaging a hollow tube 365a depending from a cap member 366. The cap member 366 carries a depending, annular skirt 368 positionable within the cylindrical member 350 for centering the cap member 366 within the open top 352. The reed 364 is protected without impeding the free flow of air to and from the cylindrical member 350 by providing the cap member 366 with a standpipe 370 by covering the open end 374 with a cap 376 (FIG. 6).

The housing 112 also includes a pair of depending pins 378 which extend downwardly into the frame 74 astraddle the actuator means 134 for guiding the upper end thereof during its reciprocation within the frame 74. The housing 112 is connected to the frame 74 in a proper position by engaging a notch 380 provided in the edge portion 114 with a pair of protuberances 382 provided on the flange 115 and by securing a pair of flanges 384 to the associated arms 386. The arms 386 are carried by a C-shaped shelf 388 which is mounted in the front frame portion 78. In addition, the housing 112 includes a forwardly-extending, stepped shelf member 390 which is supported by the shelf 388. The stepped shelf member 390 includes a depending rib 392 which engages the rear edge 394 of the shelf 388 to secure the housing 112 against forward movement on the shelf 388.

The noisemaker 326 emits a sound imitative of a crying baby, but does not emit this sound until the animating means has set the eyebrows 36 and the mouth 40 in a sad expression. This is accomplished by retaining the spring 330 in a compressed condition until the actuator means 134 travels downwardly within the frame 74 a sufficient distance to swing the animators 196, 254 and 262 to an appropriate position. The spring 330 is retained in a compressed condition by engaging a rib 396 on the actuator guide 126 by a noisemaker actuator 398. The actuator 398 includes a spider 400 (FIG. 6) having a plurality of legs 402 which each include an arcuate clamp 404 for clamping the spider 400 to the bellows 328 by engaging an annular flange 334a in arcuate channels 406 provided in the clamps 404. The spider 400 may be oriented with respect to the rib 396 by engaging the spider 400 against a pair of protuberances, like the one shown at 408 in FIG. 6, depending from the bottom wall 334. The noisemaker actuator 398 also includes a depending finger 410 which, when bellows 328 is fully expanded, extends through the guide 126 adjacent the rib 396. The lower end 411 of the finger 410 carries a shoulder 412 engageable with the rib 396 for retaining the bellows 328 in a collapsed condition against the force exerted by spring 330. The lower end 411 also carries a cam lobe 414 which may be engaged by the actuator means 134 for dislodging the finger 410 from rib 396 after the actuator means 134 has travelled downwardly in frame 74 a sufficient distance to change the facial expression of the doll 10 from a happy expression to a sad expression. The cam engaging portion of the actuator means 134 includes a platform 416 having a front edge 420 and a rear edge 422 in which U-shaped notches 424 and 426, respec-

tively, are provided. The notch 424 provides clearance for the conduit 428 and the notch 426 straddles the finger 410 in such a manner that the bight portion 428 of notch 426 engages cam lobe 414 shortly before the actuator means 134 reaches the bottom of its downward stroke. Such engagement with cam lobe 414 disengages finger 410 from rib 396. The spring 330 then expands the bellows 328 causing air to be drawn through the reed 364 actuating it. The amount the actuator means 134 travels before disengaging finger 410 may correspond to slightly more than the amount the actuator means 134 travels before the fingers 240 exert a force on the eyebrow animator 196 to start it moving downwardly. This permits the eyebrows 36 to start moving downwardly and the reservoir 242 to start collapsing slightly before the noisemaker 326 is actuated so that the doll 10 will emit a crying sound simultaneously with the tearing and the eye expression change.

Referring now more in particular to FIG. 7, the end 430 of the conduit 248 which is remote from the first end 250 is connected to a valve assembly 432 by a nipple 433 provided on a rear valve half 434 (see FIG. 6). The valve assembly 432 includes a front valve half 436 formed integrally with the front frame portion 78 and including a nipple 438 which extends through an aperture 440, provided in the inwardly extending portion 46, where the nipple 438 is accessible to a water container 442 (FIGS. 1 & 7). The water container 442 preferably simulates a baby's nursing bottle and includes a nipple 444 which may be engaged in the nipple 438 for supplying water to reservoir 242 through valve 432. The flow of water to and from the reservoir 242 through the valve 432 is controlled by a soft, rubber-like disc 446 having an annular skirt 448 seated in an annular channel 450 formed by an annular rib 452 provided in the front housing half 436 and an annular skirt 454 provided on the rear housing half 434. The disc 446 carries a hollow cylindrical member 456 which is aligned with the nipple 433 in the rear housing half 434 and which forms a flow passage 457. The cylindrical member 456 includes a first end 458 which is positioned adjacent the nipple 433 and a second end 460 which normally seats against a protuberance 462 provided in the front housing half 436 above the nipple 438. The nipples 438 and 433 are offset from each other to prevent direct flow from one nipple to the other nipple through flow passage 457.

The reservoir 242 may be filled with water by inserting the nipple 444 of the container 442 into the nipple 438 in the mouth 40 and forcing water under pressure into a chamber 464 formed by the valve half 436 and the front side 466 of the disc 446 causing it to flex sufficiently to unseat the end 460 from the protuberance 462 so that water is free to flow through the passage 457, nipple 433 and conduit 248 from which the water flows into the reservoir 242. When the reservoir 242 is collapsed by swinging the animator 196 against it, as shown in FIG. 9, water under pressure flows out of the reservoir 242, through conduit 248 and the nipple 433 from which the water flows into a chamber 468 formed by the rear side 470 of the disc 446 and the rear valve half 434 flexing the disc 446 away from an annular seat 472 and seating the end 460 against the protuberance 462. This flexing of the disc 446 away from seat 472 permits the water to flow around the seat 472, as indicated by arrows B in FIG. 9, and out a pair of conduits 474 which are carried by the rear housing half 434.

Each conduit 474 includes a discharge end 476 which is connected to an associated aperture 68 in wall 56 for supplying simulated tears to the eyes 38.

The water is caused to more realistically simulate tears by impeding the flow of water through the conduits 474 so that the water more or less oozes from the apertures 68. The flow of water through the conduits 474 may be impeded by packing a metering device in the form of a compressible member having small, open cells into the chamber 468 or the conduits 474 or both. The metering device may be in the form of a cellulose sponge, an open-celled polyurethane foam or the like. When a polyurethane foam is used, it may be compressed to 1/15th its original thickness. A metering device is shown herein for purposes of illustration, but not of limitation, as comprising a flow restriction means which is placed in each conduit 474, as shown at 478 in FIG. 8 for one conduit 474.

The rear valve half 434 is preferably located with respect to the front valve half 436 in such a manner that the conduits 474 are aligned with the apertures 68 when the head 26 is mounted on to the frame 74 by providing a fixed pin 480 on the rear valve half 434. The pin 480 may be engaged in a cylindrical, hollow boss 482 provided on the frame 74 behind the nose supporting portion 102.

The doll 10 may be animated by swinging the left arm 20. Assuming that arm 20 is in a lowered position, the actuator means 134 will then be in its lower most position wherein the corners of the mouth 40 are pulled downwardly, the lower lip 44 is thrust slightly forwardly and upwardly, the eyebrows 36 and eyelids 64 are pulled slightly downwardly over the eyes 38, as shown in FIG. 4. Also, the reservoir 242 is collapsed and the bellows 328 is in its extended position with the spider 402 resting on the platform 416, as shown in FIG. 9. The arm 20 may then be swung to an elevated position. During this upward swinging, the fingers 286 on animator means 134 immediately swing the tabs 282 upwardly pivoting the animator 254 about the pivots 256 in such a manner that the tab 300 moves downwardly causing the wire clip 288 to pull the lower lip 44 slightly downwardly and inwardly. Shortly after the tab 300 starts moving downwardly, the upper surfaces 275 on arms 272 swing upwardly into engagement with bearing surfaces 321 elevating the arms 304 in such a manner that the drooped corners 48 of mouth 40 are raised toward a pleasing expression. After the actuator means 134 has travelled upwardly sufficiently to bring the fingers 236 into engagement with the underside of the bight portion 200, the eyebrow animator 196 will start swinging upwardly on pivots 206 moving the eyebrows 36 upwardly to a normal, pleasant expression. As the animator 196 swings upwardly, the bight portion 200 moves away from the reservoir 242 permitting it to expand by releasing the vent 251 in the top of the reservoir 242. During upward travel of the actuator means 134, the platform 416 pushes the bellows 328 to a collapsed condition against the force of spring 330. When the arm 20 reaches the limit of its upward travel, the shoulder 412 engages the rib 396 to retain the spring 330 in a compressed condition.

The doll 10 may then be caused to cry by swinging the arm 20 downwardly so that the pitman 162 and rotating part 148 pull the actuator means 134 downwardly. Initial downward movement of the actuator means 134 causes the mouth animating means 260 to

move the mouth 40 toward a crying expression by having the fingers 284 immediately exert a downward force on the tabs 282 causing the lower lip animator 254 to pivot in such a manner that the tab 300 swings slightly outwardly and upwardly while the pins 276 exert a force against the arms 304 causing them to swing downwardly so that the corners 48 of the mouth 40 are also drawn downwardly. As the mouth 40 gradually changes shape, the actuator means 134 travels a predetermined distance sufficient that the fingers 240 engage the ends 216 of animator 196 swinging it in such a manner that the bight portion 200 collapses the reservoir 242 and the eyebrow clips 220 pull the eyebrows 36 and the lids 64 downwardly. Simultaneously, the edge 428 of notch 426 engages the cam lobe 414 causing the shoulder 412 to be disengaged from the rib 396 so that the spring 330 is free to expand the bellows 328 drawing air into the noisemaker 326 through the standpipe 370 and the reed 364, which emits a crying sound as simulated tears ooze from apertures 68.

While the particular animating means for a figure toy herein shown and described in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiment of the invention and that no limitations are intended to the details of construction or design herein shown, other than as defined in the appended claims.

We claim:

1. In combination with a figure toy having a torso and a head including a flexible plastic face having simulated nose, eyebrow, eye and mouth portions, said mouth portion including an upper lip and a lower lip, said lips being joined together in such a manner that said mouth portion includes a pair of corner portions defining the width of said mouth portion, animating means comprising:

a first mouth animating means operatively connected to said lower lip and including a first animator portion secured directly to and engaging only an intermediate portion of said lower lip between and spaced from said corner portions;

a second mouth animating means comprising spaced animator portions secured directly to said mouth only at said corner portions for predetermining the position of each of said corner portions; and actuator means connected to at least one of said mouth animating means for imparting relative movement between said first animator portion and said spaced animator portions, said actuator means including means for moving said one mouth animating means in such a manner that said first animator portion is moved relative to said spaced animator portions between a smiling position wherein said first animator portion is below said spaced animator portions and a sad position wherein said first animator portion is between and above said spaced animator portions.

2. A toy as defined in claim 1 wherein said first mouth animating means moves said first animator portion upwardly and forwardly of said face, relative to said spaced animator portions, when relatively moving said lips from said smiling position toward said sad position.

3. A toy as defined in claim 1 wherein said actuator means is arranged to simultaneously move both said

first and second mouth animating means in opposite directions between said smiling and said sad positions.

4. A combination as stated in claim 1 including means for supplying simulated tears to said eye portions, said simulated tear supply means being connected to said actuator means for actuation thereby.

5. A combination as stated in claim 4 wherein said actuator means includes means for delaying actuation of said tear supply means until actuation of said mouth animating means has begun.

6. A combination as stated in claim 1 wherein said animating means includes sound producing means operatively associated with said actuator means for emitting a sound when said mouth animating means is actuated.

7. A combination as stated in claim 1 including eyebrow animating means comprising:

a U-shaped member having a pair of legs and a bight portion, each of said legs having one end connected to said bight portion and a free end;

a crank arm connected to each of said free ends for swingably mounting said eyebrow animating means in said head;

a pair of passageways provided in each of said crank arms adjacent each of said free ends; and

a pair of U-shaped clips, each of said clips having a bight portion embedded in said plastic face adjacent an associated simulated eyebrow portion and a pair of arms extending from said clip bight portion into engagement with said crank arms at associated ones of said passageways, whereby swinging of said eyebrow animating means within said head pulls said eyebrow portions.

8. A combination as stated in claim 1 wherein said second mouth animating means includes:

a pair of arms swingably mounted in said head, each of said arms having a free end positioned behind an associated corner portion of said mouth portion; said spaced portions maintaining said corner portions in said predetermined positions comprising wire clip means embedded in each of said corner portions of said mouth portion; and means connecting said wire clip means to an associated free end of said arms.

9. A combination as stated in claim 7 including a frame mounted in said head for supporting and caging said animating means, said frame comprising:

a skull portion supporting said head, said skull portion including a support for said nose portion and being provided with eye openings and a mouth opening, said animating means being connected to said eyebrow portions and said mouth portion through associated ones of said openings;

means supporting said eyebrow animating means and said mouth animating means within said skull portion;

a cylindrical portion extending from said skull portion into said torso; and

means provided in said skull portion and said cylindrical portion for mounting said actuator means in operative association with said eyebrow animating means and said mouth animating means.

10. A toy as defined in claim 7 wherein said actuator means is arranged to actuate said one mouth animating means through a portion of its movement before starting to actuate said eyebrow animating means.

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11. In a doll, a head having simulated eyes, holes in the head in the region of said eyes, a reservoir adapted to be filled with a tear-simulating liquid, conduits extending from said reservoir to said holes, the interiors of said conduits communicating with both said reservoir and said holes, a movable appendage forming part of the doll, and means responsive to movement of said

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appendage for selectively permitting or preventing the flow of liquid from said reservoir to said holes.

12. In a doll, the arrangement defined in claim 11 wherein said responsive means includes a valve means for controlling the liquid flow between said reservoir and said holes.

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