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Barlow et al.

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[54] **ANIMATED DOLL**

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[52] **U.S. Cl.**................................... **46/120, 46/165**
[51] **Int. Cl.**... **A63h 11/00**
[58] **Field of Search** 46/116, 120, 165, 297

[56] **References Cited**

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[57] **ABSTRACT**

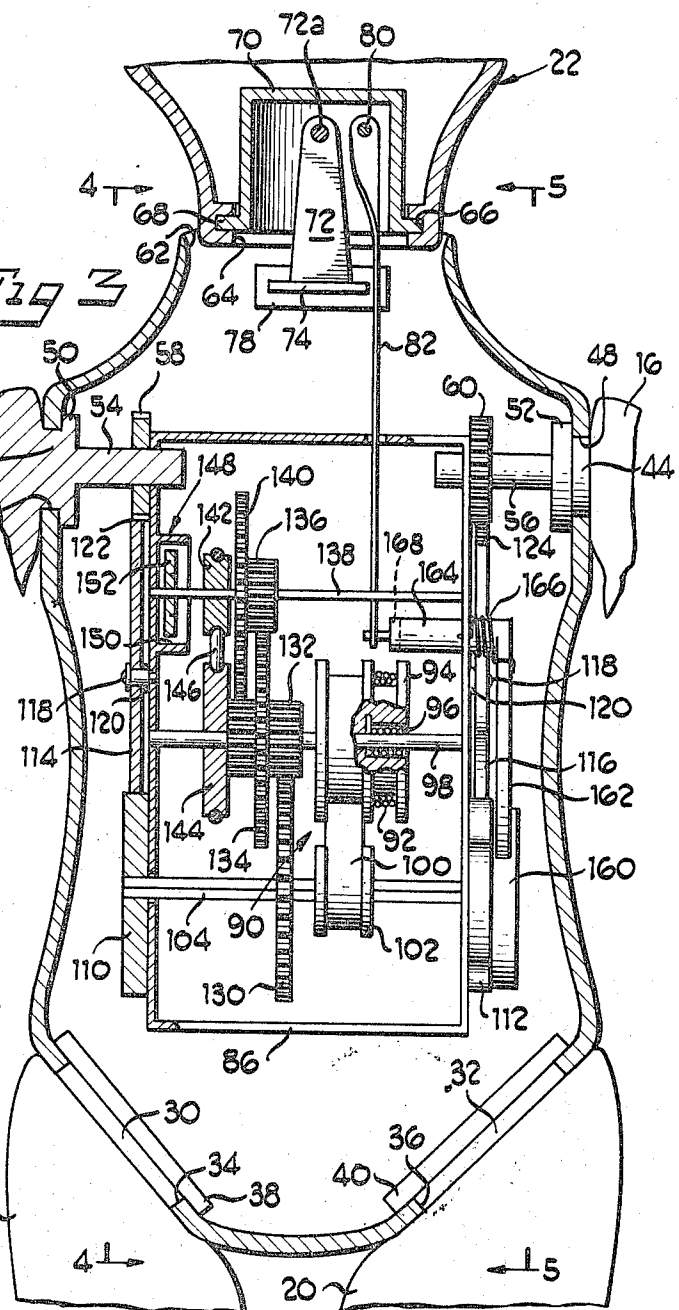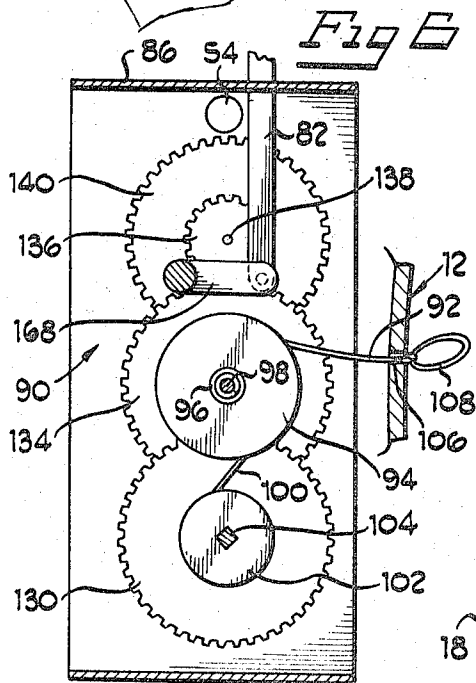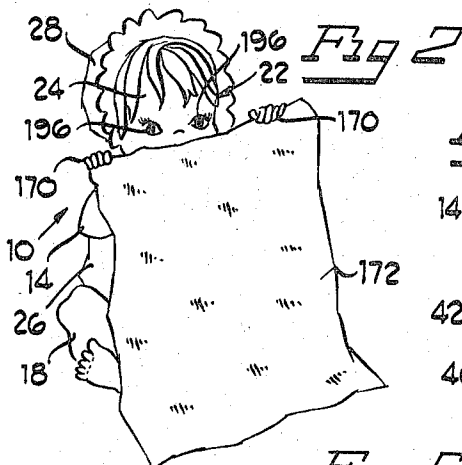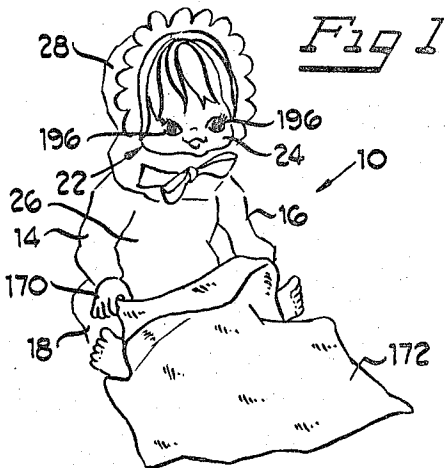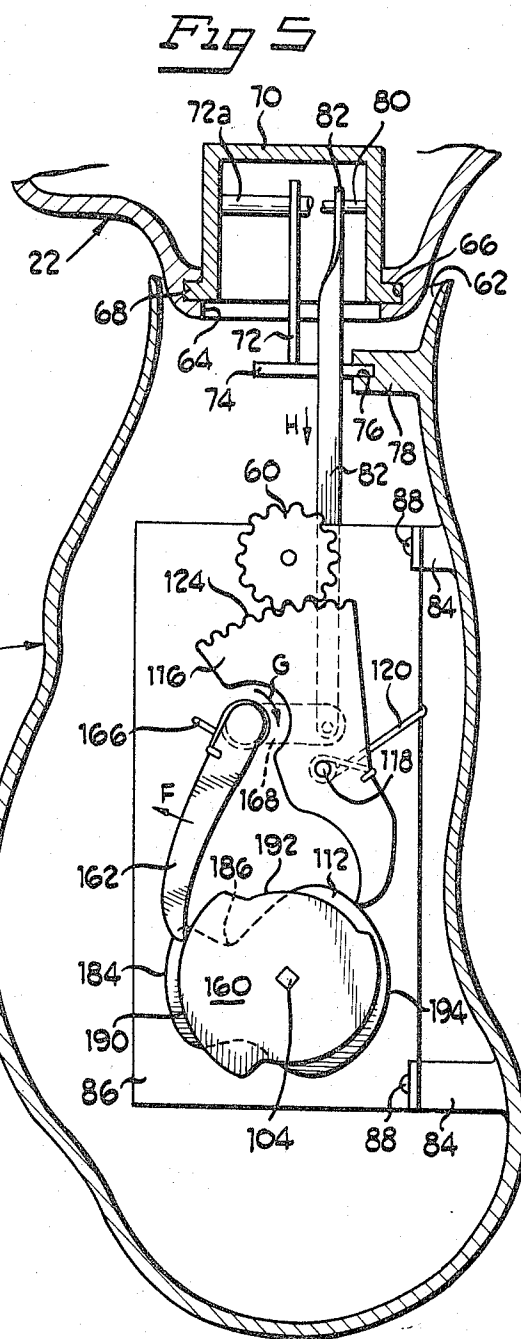An animated doll which simulates the movements of a child playing "Peek-A-Boo". The doll has internal mechanism operated by a pull string motor which causes the doll's arms to move between lowered and raised positions in a cam controlled program to lift a simulated blanket therewith to a raised position in front of at least part of the doll's face. The mechanism also imparts movement to the doll's head and eyes in coordination with the arm movement.

6 Claims, 7 Drawing Figures

Fig 1

Fig 2

Fig 3

Fig 6

Fig 7

Fig 5

Fig 4
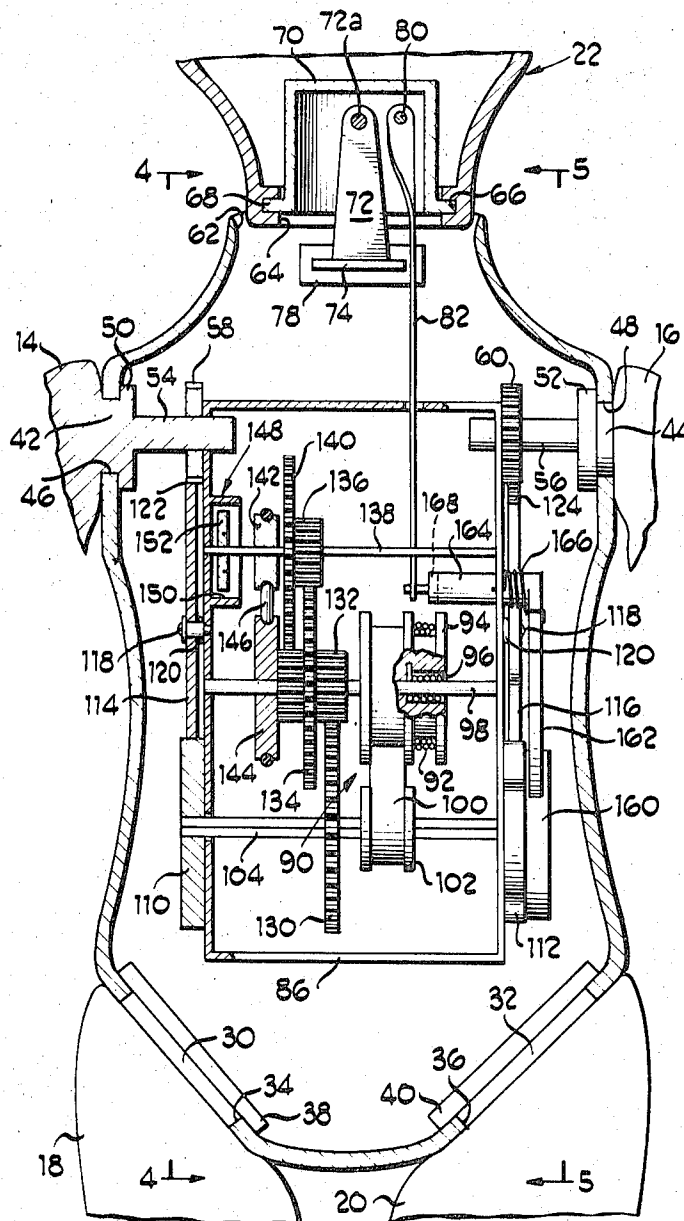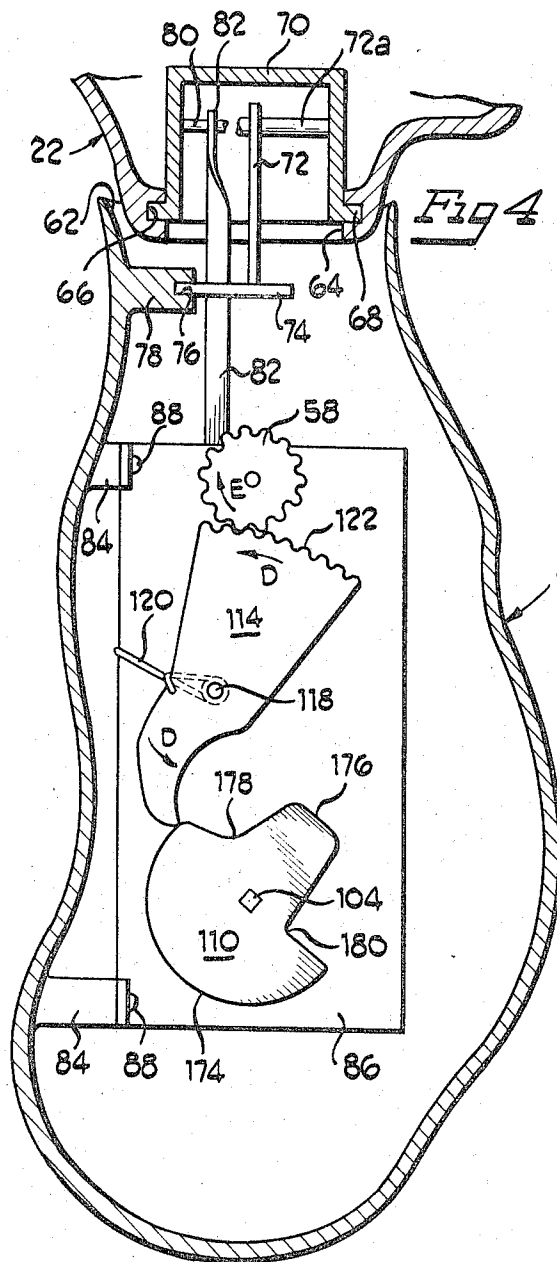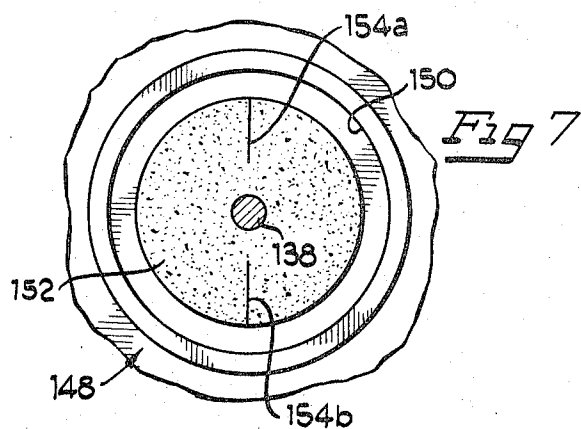
ANIMATED DOLL

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to animated dolls and more particularly to a doll which simulates the motion of a child playing the game of "Peek-A-Boo".

2. Brief Description of the Prior Art

The art of dolls with articulated limbs is abundant and includes many different forms of simulated animation. It is believed that young children readily identify with animated dolls in that the realism added by the animated movements gives a dynamism to the relationship, thereby increasing the child's desire to involve himself in real and fanciful activities with the animated doll.

One simple activity or game which extremely young children universally enjoy is that of the conventional game of Peek-A-Boo. A doll has been provided in the art which is capable of playing one version of the game of Peek-A-Boo and is illustrated in U.S. Pat. No. to Johmann 3,672,096 which issued on June 27, 1972. However, the structure shown therein accomplishes this by covering the eyes of the doll with the hands and arms and involves relatively complex driving arrangements.

It is an object of this invention to provide for the continuing need in the art of improvements in animated dolls by providing an animated doll which undergoes the movements of the game of Peek-A-Boo and wherein both the movements and structure provided therefor are relatively simple so as to lend to the durability and repeated performance of the device.

SUMMARY OF THE INVENTION

This invention relates, in brief, to the provision of an improved animated doll capable of playing the game of Peek-A-Boo.

The best mode currently contemplated includes the provision of a pull string motor mounted within the doll torso and which is connected, by means of a gear train, to each of the doll arms which may be pivoted between lowered positions and raised positions. In addition, a tracking arrangement of a cam follower and a driven cam is associated with the doll's head to coordinate the head movements with the arm movements as the arms move between the lowered and raised positions. The doll is provided with a simulated blanket to be held in the doll's hands so that, during the operation of the doll, the blanket will be moved from a lowered position on the lap of the doll to a raised position substantially covering the doll's face and then back down again, thereby performing the movements associated with the game of Peek-A-Boo.

In the exemplary embodiment the cams effect a movement program whereby, in response to a single pull of the string, one of the doll's arms first is raised while the head moves slightly in that direction, that arm then is lowered and the other arm is raised while the head moves slightly in the other direction, and then both arms are raised while the head is held stationary.

Other objects, features and advantages of the invention will be apparent from the following detailed description taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the animated doll of this invention with the doll's arms and the blanket in their lowered positions;

FIG. 2 is a view similar to FIG. 1 with the doll's arms and the blanket in their upper positions substantially covering the doll's face;

FIG. 3 is a fragmentary vertical section, on an enlarged scale, through the animated doll of this invention in a side-to-side direction;

FIG. 4 is a vertical section taken generally along the line 4—4 of FIG. 3;

FIG. 5 is a vertical section taken generally along the line 5—5 of FIG. 3;

FIG. 6 is a sectional view through the motor housing for the doll of this invention; and

FIG. 7 is a fragmentary enlarged view of the means for retarding the motion of the doll.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENT

The doll of this invention, generally designated 10, includes a torso, generally designated 12, a pair of arms 14 and 16, and a pair of legs 18 and 20, each of which are connected to the torso. In addition, a head, generally designated 22, is provided having the usual facial features 24. A suitable fabric garment 26 is provided for enclosing the body or torso of the doll, and a decorative bonnet 28 may also be provided for the head of the doll.

The legs 18 and 20 terminate in reduced necks 30 and 32, respectively, which are received in torso openings 34 and 36, respectively, and are provided with enlarged flanges 38 and 40, respectively so that by this arrangement the legs are pivotally mounted to the torso. Each arm 14 and 16 also has a reduced neck portion 42 and 44, respectively, near its upper end which extends through a shoulder torso opening 46 and 48, respectively, to pivotally mount the arms with respect to the torso. The arms are provided with enlarged flanges 50 and 52, respectively, which bear against the inside of the torso about each opening 46 and 48 to hold the arms against withdrawal from the torso. The arms 14 and 16 further terminate in inwardly directed, mutually facing, stub shafts 54 and 56, respectively, each of which mounts a gear 58 and 60, respectively. The gears 58 and 60 are part of a gear train for receiving the driving force to move the arms through their pivotal movement as will be described.

The upper portion of the torso 12 is provided with a neck opening 62 for receiving the head assembly 22. Head 22 has an open bottom 64 provided with an annular recess 66 which receives an annular flange 68 of an inverted cup-like insert member 70. A horizontal generally centrally located pivot rod 72a extends fore and aft across the interior of member 70 and mounts a vertical support bar 72 therein. Support bar 72 terminates in a base or horizontal leg 74 which is received in a slot 76 (FIG. 5) of a support web 78 which extends inwardly from and formed integrally with the rear interior wall of the torso 12.

An actuating rod 80 extends across the interior of the cup-like insert member 70 radially offset from the center pivot rod 72a. Actuating rod 80 is connected to an actuating link 82 which extends through the open end 64 of the head as well as the neck opening 62 in the

torso and downwardly into the interior of the torso where it is connected with the drive mechanism, as will be described hereinafter, for vertically reciprocating the actuating link 82. This movement is translated into tilting movement of the doll's head from side to side about the axis defined by the pivot rod 72a.

The torso interior is provided with supporting stubs 84 (FIG. 5) for mounting a box-like frame 86, through the aid of suitable screws 88 or similar fastenings. The operative mechanism of the doll is mounted on frame 86.

The operative mechanism includes motive means provided for supplying power and takes the form of the well known pull-string type means, generally designated 90. This mode 90 includes a string 92 which is wound about a pulley portion 94 connected with an interiorly positioned torsion spring 96 interconnected with a mounting shaft 98. A strap-like negator spring 100 is wrapped about a second pulley 102 which is fixed to a drive shaft 104. The pull string 92 extends through an opening 106 (FIG. 6) in the rear of the doll torso and terminates in a grasping loop or ring 108. When the string 92 is pulled so that it is extended, the torsion spring 96 will be stressed to urge the pulley 94 to revolve in an opposite direction, or one which will cause the string to be taken up and will also cause the negator spring 100 to rotate shaft 104 as it wraps about pulley 102.

Programming means in the form of cams 110 and 112 are connected to the opposite ends of the drive shaft 104 on the outside of the frame 86. Cam followers 114 and 116 are pivoted, such as at 118 to each side of the frame, and are urged by springs, such as 120 so as to normally be in following engagement with its respective cam 110 or 112. Thus, as the drive shaft 104 rotates to thereby rotate each cam 110 and 112 motion will be imparted through the tracking engagement of the cam followers 114 and 116.

Each cam follower 114 and 116 terminates at its upper end in an arcuate gear segment or rack 122 and 124, respectively, each of which is in meshing engagement with the gears 58 and 60, respectively, which are fixed on the arm stubs 54 and 56. Thus, as the gear segments 122 and 124 are moved back and forth responsive to the tracking of the followers on the cams 110 and 112, the gears 58 and 60 will be rotated back and forth with respect to their mounting on each stub of the arm so as to impart the up and down lifting and dropping movement of each of the arms 14 and 16. The resulting movement program for the arms as effected by the cams will be described hereinafter.

A gear 130 is fixed to shaft 104 and is in meshing engagement with a pinion 132 on shaft 98 which, in turn, supports a gear 134 in meshing engagement with a pinion 136 on shaft 138. Pinion 136 also has a gear 140 which returns in meshing engagement with pinion 132 on shaft 98. A pulley wheel 142 is mounted on a shaft 138 above a second pulley wheel 144 on shaft 98. A resilient belt 146 is wrapped about the two pulley wheels 142 and 144. Through this pulley-belt drive arrangement, the wheels provide a sound dampening means for the entire motive system so as to reduce the noise occasioned by the movement of the several related parts.

In addition, a governor or speed regulating means, generally designated 148 (FIGS. 3 and 7), also is provided. The governor takes the form of a cylindrical member 150 protruding inwardly from one side wall of

the frame 86 into which the shaft 138 extends. The shaft 138 also supports a disc 152 within the confines of the cylindrical chamber 150. The disc is split at 154a and 154b, and preferably is made of a heavy fabric such as a heavy felt. As the shaft 138 rotates, centrifugal force will cause the material to spread and come into contact with the interior of the walls defining the cylindrical chamber 150. The resultant friction will thus reduce the speed of rotation of the shaft 138 and therefore, through the aforedescribed gear train, have a retarding effect on the entire drive system.

Means also are provided for driving the doll's head 22 from side-to-side in a nodding motion in response to rotation of the drive shaft 104. The rotational movement of the shaft 104 about a horizontal axis will be translated into the side-by-side nodding movement of the head also about a horizontal axis but oriented in a transverse direction relative to that of the shaft 104. Included in this means is a cam 160 (FIGS. 3 and 5) positioned at one end of shaft 104 outside of the cam 112. Cam 160 is in engagement with a tracking follower 162 mounted on a horizontal rod 164. A torsion spring 166 is connected to the frame and normally urges the follower 162 against the cam 160 so that the follower will track on the periphery of the cam as the shaft is rotated and will produce an irregular movement corresponding to that of the cam periphery. The rod 164 is connected with a bell crank type link 168 which is pivoted to the aforementioned upright link 82 which, in turn, is connected with the offset rod 80 in the head insert member. Thus, as the follower 162 moves up and down responsive as it tracks on the periphery of the cam 160, the link 82 will be caused to move up and down causing to and fro side-to-side movement of the head about the shaft 80.

The doll's arms 14 and 16 have hand portions 170 (FIG. 1) with finger portions or other appropriate means for grasping a simulated blanket 172. Thus, as either of the doll's arms are raised from the position shown generally in FIG. 2 to a raised position, the blanket will be brought upwardly therewith to cover at least a portion of the doll's face. Preferably the doll's arms are sufficiently spaced sideways so that it is the blanket which covers the doll's face and/or eyes.

The program of movement for the doll's arms 14 and 16 and the doll's head 22, as effected by the cams 110, 112 and 160, respectively, will now be described. Turning first to FIG. 4, the cam 110 for the doll's right arm 14 is shown to have various "high" and "low" peripheral areas along which the cam follower 114 rides. More particularly, a high area 174 extends approximately 180° about the cam, generally opposite another smaller high area 176. The "highs" 174 and 176 are separated by low areas 178 and 180. It will be apparent that the low areas 178 and 180 cause the cam follower 114 to rotate the doll's right arm to its lower position shown in FIG. 1 and the high areas 174 and 176 effect raising of the doll's right arm.

More particularly, as the cam follower 114 moves in a low area 178 or 180 on the cam 110, the cam follower will rotate about point 118 in the direction of arrows D (FIG. 4). Rotation of the cam follower 114 in the direction of arrows D causes the gear segment or rack 122 on the cam follower to rotate the gear 158 in the direction of arrow E (FIG. 4) to rotate the right arm to its lower position. As the cam follower rides back upwardly onto one of the "highs" 174 or 176 the cam fol-

lower 114 will rotate opposite the direction of arrows D and rotate the gear 58 therewith opposite the direction of arrow E to raise the doll's right arm upwardly as shown in FIG. 2.

Referring to FIG. 5, the cam 112 also has high areas 182 and 184 for the doll's left arm 16 corresponding to the "highs" 174 and 176, respectively, for cam 110 for the doll's right arm. The cam 112 also has low areas 186 and 188 corresponding to the low areas 178 and 180 for the right arm cam 110. However the cams 110 and 112 are mounted on the shaft 104 in different orientations.

It will be apparent that with the illustrated arrangement of the cams 110 and 112, both of the doll's arms will be moved simultaneously to a raised position as the cam followers 114 and 116 ride over the high areas 174 and 182 of the respective cam members 110 and 112. Both of the doll's arms will be in their lower positions simultaneously as the cam followers 114 and 116 ride into the low areas 180 and 188, respectively, of the respective cam members 110 and 112. However, with the cam follower 114 in the low area 178 of its cam 110 for the doll's right arm, the cam follower 116 will be on the high area 184 of the left arm cam 112. Correspondingly, as the cam follower 114 for the doll's right arm rides onto the high area 176 of the cam 110, the cam follower 116 for the doll's left arm will ride into the low area 186 of the cam 112. With this arrangement, on a single pull of the pull-string 192, one of the doll's arms will be raised upwardly to bring the blanket 172 therewith while the other arm remains in its lower position. Thereafter, the opposite arm is raised upwardly and the first arm is moved back to its lower position. Then, both of the doll's arms are raised upwardly as the cam followers 114 and 116 ride onto the cam "highs" 174 and 182, respectively, bringing the blanket 172 upwardly with the arms to cover portions of the doll's face and/or eyes.

The cam 160 for the doll's head rotates with the cams 110 and 112 on the shaft 104 and also provides a programmed movement correlated with the movement of the doll's arms. More particularly, cam 160 has three different cam areas 190, 192 and 194 which have different radial distances from the axis of shaft 104. Cam area 190 has the greatest radial distance and, consequently, urges the cam follower 162 outwardly from the cam the greatest distance in the direction of arrow F (FIG. 5). As the cam follower 162 moves outwardly against the biasing of torsion spring 166, the link 168 will move downwardly in the direction of arrow G (FIG. 5) pulling the actuating link 82 for the doll's head downwardly therewith in the direction of arrow H (FIG. 5). Thus, as best seen in FIG. 3, with the link 82 being on the left side of the doll in relation to the pivot axis 72a for the doll's head, the left side of the doll's head will be pulled downwardly in a leftward nodding motion as the cam follower 162 rides over the cam area 190 of cam 160. Cam area 192 has the least radial distance from the axis of shaft 104 and thus moves the cam follower 162 the greatest distance inwardly toward the shaft 104, and, through link 168, moves the head actuating link 82 upwardly to tilt the head of the doll to the right about the pivot axis 72a. The cam area 194 of cam 160 is an "intermediate" area distancewise relative to the cam areas 190 and 192 and simply holds the link 82 in the position shown in FIGS. 3 through 5 to hold the doll's head in an upright disposition. Thus,

with the cam 160 correlated angularly on the shaft 104 relative to the arm cams 110 and 112, the doll's head 22 will be caused to tilt to the left as the doll's left arm is raised, then tilt to the right as the doll's right arm is raised, and then remain in a generally upright disposition while both arms are raised simultaneously bringing the blanket 172 upwardly therewith.

In the preferred embodiment of the invention, the doll's eyes 196 (FIGS. 1 and 2) are weighted in a known fashion and are received in sockets for pivoting under gravity in response to the aforementioned tilting of the doll's head. Preferably the eyes are pivotable about a generally upright axis so that the iris portions of the eyes move sideways in the same direction that the doll's head is tilted.

The foregoing detailed description has been given for clearness of understanding only and no unnecessary limitations should be understood therefrom as some modifications will be obvious to those skilled in the art.

We claim:

1. An animated doll, comprising:
   a torso having a shoulder joint at each side;
   a head mounted on top of said torso;
   a first arm and a second arm rotatably mounted on said torso at said shoulder joints for pivoting relative to said torso at said shoulder joints about a transverse, side-to-side axis between lowered positions and raised positions;
   a blanket attached between outer ends of said arms for movement therewith to simulate the movements of a child playing peek-a-boo; and
   motive means within said torso, including programming means, operatively connected to said arms to move said arms and said blanket therewith in a given sequence between a first position whereat both arms are in their lowered positions, a second position whereat both arms are in their raised positions, and a third position whereat the first arm is in a raised position and the second arm is in a lowered position.

2. The animated doll of claim 1 wherein said programming means includes means effective to move said arms from said first position to said second position back to said first position then to said third position back to said first position then to a fourth position whereat the first arm is in a lowered position and said second arm is in a raised position, and back to said first position.

3. The animated doll of claim 1 wherein the head portion of the doll is movably mounted on the torso portion for tilting movement relative thereto, the head portion being operatively associated with said motive means so as to tilt sideways toward said first arm as that arm is moved by said motive means to its raised position in one of said second and third programmed positions.

4. The animated doll of claim 3 wherein the doll includes weighted eye means movable under gravity sideways in relation to the front of the doll's head so as to move automatically in response to tilting of the doll's head.

5. The animated doll of claim 2 wherein said motive means includes two individual cam members, one operatively associated with each of the doll's arms for effecting said sequence of arm movements.

6. The animated doll of claim 1 wherein said motive means includes a rotatable drive shaft, a pull-string mechanism for actuating rotation of said drive shaft and a governor associated between said drive shaft and said pull-string mechanism.

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