

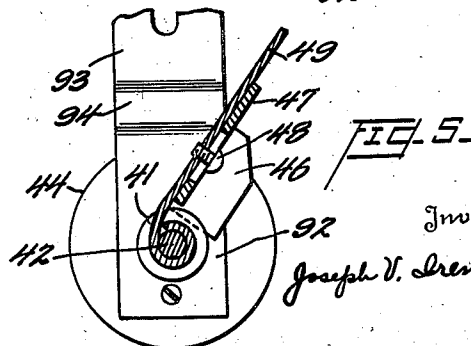
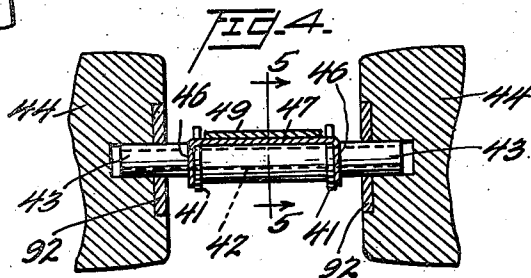
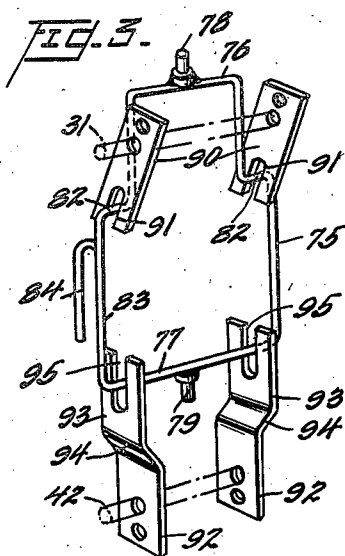
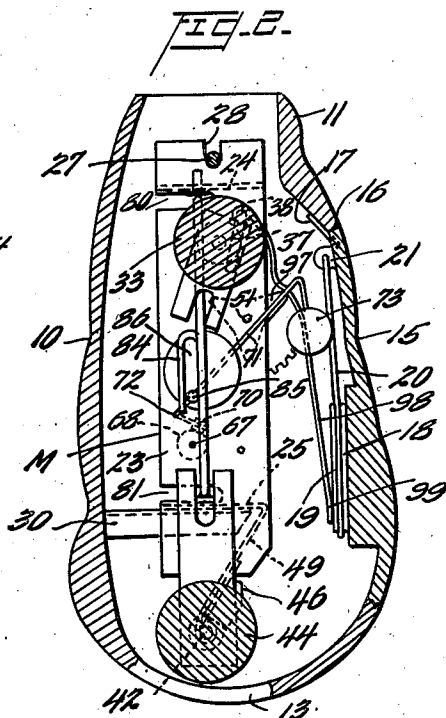
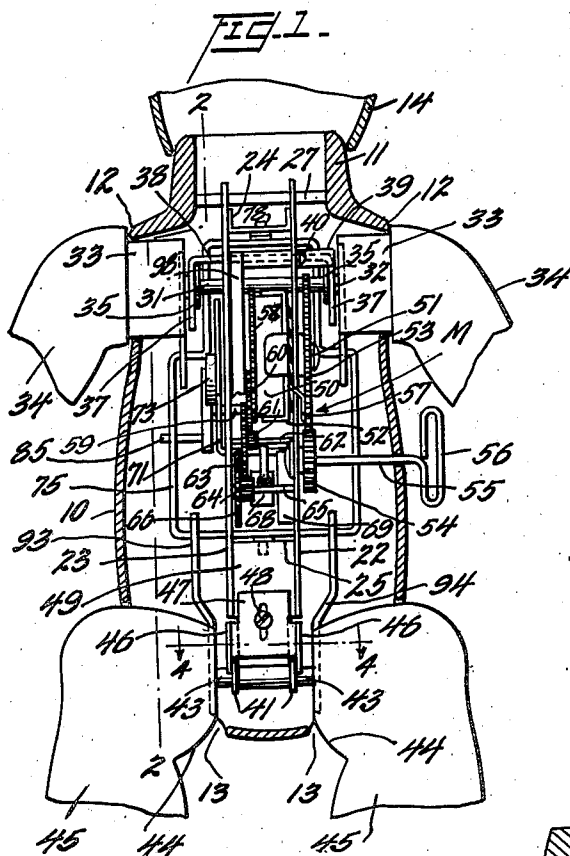
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2,277,762

ANIMATED DOLL

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2,277,762

ANIMATED DOLL

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18 Claims. (Cl. 46—118)

This invention relates to dolls and more particularly to animated dolls which simulate infants by kicking, waving their arms and crying when placed in a supine position and becoming instantly quiet and still upon being picked up.

It is a general object of the present invention to provide a novel and improved doll of the type described.

More particularly, it is an object of the invention to provide novel actuating mechanism for the arms and legs of a doll.

Another object of the invention consists in improving the mounting and arrangement of the sounding or crying mechanism whereby it may be actuated either by changing the position of the doll or by a spring motor within the same.

An important feature of the doll of the present invention comprises the mounting of a clockwork motor within the hollow body of the same, in providing parallel shafts extending from this motor, which serve solely to journal the arms and the legs separately to the doll, and in providing simplified mechanism for independently actuating the arms and legs from the motor.

Another important feature consists in the provision of a rocker frame pivoted on an axis disposed longitudinally of the doll to cooperate with forked levers on the arms and legs, which levers face each other on each side of the doll so that the arm and leg on each side are operated in opposition and the arms and legs respectively move alternately.

Another important feature of the present invention consists in the arrangement of a removable body portion, preferably a stomach and chest section upon the underside of which is mounted a weight-actuated sounding device, the construction being such that the weight may move from one position to another under the action of gravity when the doll is moved to thus produce crying sounds, and which may also be operated by the clockwork mechanism which is provided to move the arms and legs of the doll.

Other and further features and objects of the invention will be more apparent to those skilled in the art upon a consideration of the accompanying drawing and following specification, wherein is disclosed a single exemplary embodiment, with the understanding that such modifications may be made therein as fall within the scope of the appended claims without departing from the spirit of the invention.

In said drawing:

Figure 1 is a transverse vertical section through the body portion of a doll constructed according

to the present invention, showing all of the operating mechanism in elevation;

Figure 2 is a fore and aft vertical section taken on line 2—2 of Figure 1;

Figure 3 is a perspective view of the rocker frame showing its cooperation with the bifurcated levers for moving the arms and legs;

Figure 4 is a horizontal section on line 4—4 of Figure 1, illustrating the mounting of the legs on the motor frame; and

Figure 5 is a central section on line 5—5 of Figure 4.

It has heretofore been proposed to provide a doll simulating an infant which is capable of moving its arms and legs and emitting crying sounds when placed in one position and of remaining still and quiet when placed in another position. In accordance with the present invention, improved mechanism for carrying out certain of the movements and for producing the sound is provided which is much simpler, cheaper, sturdier, and lighter in weight.

In general, the invention comprises a doll of customary form, simulating an infant, and having movable arms and legs. The hollow body houses a suitable motor, preferably clockwork, and improved mechanism, including a rocker frame, is provided for causing the arms to wave alternately and the legs to kick alternately, the arm and leg on each side moving in opposition. Combined with this mechanism is a simple lever for multiplying the throw of a cam on a shaft of the motor which engages with a weight actuated sounding device to cause the same to sound intermittently at a much slower rate than the arm movement.

This invention constitutes improvements intended to simplify the construction and reduce the cost of the doll shown in the copending application of Mrs. Cecilia E. Bowers for Animated toy, Serial No. 168,284, filed October 9, 1937. That application discloses a doll, the body of which contains a spring motor adapted to oscillate the arms and legs and actuate a crying mechanism, the motor being under the control of a stop or brake means which prevents the operation of the motor except when the doll is placed in a supine position. The present invention includes improvements and refinements in the mechanism for producing the results of that application.

In the drawing there is shown at 10 the hollow body portion of a doll, the whole of which is preferably constructed to simulate a very young infant by appropriate contour, coloring, dressing

and the like. The body is formed of any suitable material capable of being molded to the hollow shape shown which includes the neck portion 11, the openings 12 for the arms and the openings 13 for the legs. A suitable head, a portion of which is shown at 14 fits over the tapered neck portion and is secured to the body by a spring or elastic in the conventional manner.

The hollow body, which is intended to house a suitable motor M, is provided with a removable section 15 normally closing a large opening 16 preferably in the front wall of the body. This section may be removably secured in position by any suitable means. As shown, the upper end of the section is provided with a tongue 17 which fits beneath the wall of the body above the opening. The edges of the opening are sufficiently tapered so that the section 15 will not fall inside and it only remains to provide a suitable fastening near the bottom to secure it in position.

The removable section 15 carries on its under surface a sounding or crying device 18 of well known form, including a bellows attached to the section 15 and closed at its outer end by a weighted member 19 in which the sounding reed is mounted. A bail 20 secured to the weighted portion by engaging a peripheral groove therein extends up and has its ends pivoted in ears 21 on the under surface of the removable body section. This bail guides the weight in its movement so that the bellows can be of very soft flexible material. With this construction if the doll is placed on its back the weight moves toward the back of the doll extending the bellows. Any movement of the doll beyond the vertical then permits the weight to return to its forward position as shown, collapsing the bellows, forcing the air out through the reed and sounding the same. This type of construction is used in crying dolls.

A motor M for operating the various portions of the doll is arranged to be mounted within and spaced from the walls of the hollow body. It is built up about a pair of spaced parallel side plates or frame members 22 and 23 which are rigidly connected by the spacers 24 and 25 appropriately secured to the side plates.

The overall length of the motor is considerably greater than the vertical height of the opening 16 which does not extend upwardly much further than about mid-height of the arm openings. In order to install the motor the upper end is inserted through the opening 16, extended up into the neck portion and then the lower end swung into position. To secure the motor in position there is extended across the neck section the transverse rod 27 molded into the material of the doll and adapted to cooperate with the notches 28 in the upper ends of the side plates 22 and 23 as clearly shown in Figures 1 and 2. The lower end of the motor is adapted to be attached to the body in the following manner. A suitable pressed metal post 30 of channel section is molded into the rear wall of the body and extends forwardly to be received beneath the spacer 25 and closely between the side plates to which it is attached by bolts, screws or other suitable fastenings. The motor is thus supported from the neck and the rear of the body in a rigid position and centrally of the hollow portion thereof.

Coaxial with the arm openings 12 is a rod or shaft 31 mounted in the motor frame and having lateral extensions which are received with a

working fit in tubular bushings 32 in the portions 33 of the arms 34 which extend through the arm openings 12. These bushings or tubes 32 have radial end flanges 35 spaced inwardly from the ends of the arm portions 33 a sufficient distance to accommodate the ends 37 of the U-shaped locking wire which bear on the inner faces of the flanges. Such a wire is passed through openings in the side plates of the motor frame and its ends serve to prevent the arms from being withdrawn. The wire may be pivoted about its central portion 38, in the side plates, to release the arms and may be clamped in arm holding position by means of a lug 39 secured to the side plate 22 by means of a bolt 40.

The construction for mounting the legs is quite similar to that described for the arms and is shown in detail in Figures 4 and 5. It comprises a shaft 42 mounted in the side plates of the motor at the lower end thereof and forming journals for the sleeves 43 mounted in the inner extensions 44 of the legs 45. These sleeves 43 have radial end flanges 41 formed integral therewith and spaced from the inner ends of the leg sections as shown in Figure 4. They cooperate to hold the legs in position with flanges 46 on plate 47 slidably mounted by means of screw and slot 48 to an inclined portion 49 of the spacer 25. When the screw is loosened the plate 47 can be lifted and the legs released for withdrawal.

A slight modification of the leg and arm mounting construction just described might include the rigid fixing of the mounting shaft in one arm or leg and the journalling of the other thereon. In this case the shaft would oscillate in the bearings in the motor side plates.

The motor shown is the clock work type and includes the spring 50 having its inner end attached to the main shaft 51 journaled in the side frames of the motor. The outer end of the spring is secured in a cage 52 attached to a sleeve, not shown, surrounding a portion of the shaft 51 and passing through the motor frame plate 22. This sleeve is securely attached to large gear 53 outside of plate 22 and meshes with a smaller or winding gear 54 attached to shaft 55, the end of which extends out through an opening in the side of the doll and is formed into a key 56 for winding the spring. The outer radial surface of the cage is punched into ratchet teeth which are engaged by a spring pawl 57 to prevent unwinding of the spring. The construction just described insures the key remaining stationary when the motor is running.

The main shaft 51 mounts the large gear 58 considerably inside of the motor frame plate 23. This gear meshes with a pinion on shaft 59 which has fixed thereto a gear 60 meshing with pinion 61 on shaft 62. This shaft carries the gear 63 driving the pinion 64 on shaft 65 which also carries gear 66 meshing with a pinion, not shown, on shaft 67 mounting the brake drum 68 and carrying a centrifugal governor housed within the cup 69.

The mechanism just described is a more or less conventional clock work and includes a governor for maintaining the speed as nearly uniform as possible. The high speed brake drum is arranged to have a soft brake block 70 pressed against it to stop operation of the motor. This block is carried by the wire 71 which is bent to pass through and journal in the side plate 23 at 72 close to the block. An upward extension of the wire carries the remotely positioned weight 73 which pulls the brake member 70 into con-

tact with the drum when the doll is in a vertical position as shown in Figure 2, but which weight drops back when the doll is placed supine, releases the brake from the brake drum and permits the operation of the clock mechanism. This control insures that the doll will perform only when lying on its back and will stop immediately upon being lifted to a vertical position as by being held in a child's arms, thereby simulating the actions of a spoiled infant who cries and kicks when lying down and ceases immediately upon being picked up and held.

The arms and legs of the doll are arranged to be moved by the motor in a manner simulating the waving and kicking of the arms and legs of an infant when in a supine position. Motion about their shafts is imparted to the arms and legs from a rocker frame 75 conveniently formed of bent wire to the shape best shown in Figures 1 and 3 and including upper and lower cross members 76 and 77, respectively, having central pivots 78 and 79 which are journaled in suitable holes in the spacers 24 and 25 for the main side plates of the motor. In order that the cross members 76 and 77 carrying these pivots may not interfere with the frame, the side plates are notched as at 80 and 81.

The upper portion of the rocker frame is narrow, to pass between the inner ends of the arm members, but widens out below them by means of off-set portions 82. On one side member 83 of the frame is secured a curved wire 84 forming with the frame wire a yoke slot for cooperation with the eccentric pin 85 on the disc 86 mounted on shaft 59 driven directly from the main gear on the spring shaft and thus having a relatively slow speed. It will be seen that, when the motor is in operation, the rotation of the eccentric pin 85 will cause it to alternately engage the upper and lower elements 83 and 84 of the scotch yoke and rock the frame about its pivots 78, 79.

Each arm and leg is equipped with means to cooperate with the rocker frame to transmit the motion thereof to these limbs. As shown, each arm has its flat inner end recessed to receive a lever 90, suitably attached thereto, extending radial to its mounting shaft 31 and being notched or bifurcated as at 91 to take over the off-set 82 on the rocker frame. Likewise each leg has its inner face notched to receive the portion 92 of a lever 93 fitted with off-set 94 so that its bifurcated end 95 engages near the outer end of the cross member 77 at the lower end of the rocker frame. By thus engaging the rocker frame with the legs at greater lateral distances from their pivots than the distances from the points of engagement of said rocker frame with the arm levers to their pivots, less motion is imparted to the legs than to the arms.

It will be noticed that the arm levers point downwardly and the leg levers upwardly to cooperate with the rocker frame and thus when the frame rocks so that one of the side members thereof moves toward the rear of the doll the corresponding arm moves downwardly or rearwardly while the corresponding leg kicks forwardly. The legs move in opposition to each other as do the arms.

In order that the crying mechanism may be actuated from the motor, but not necessarily in synchronism with the motions of the arms and legs, the main shaft 51 of the motor is provided with a multi-lobed cam 97 located between the frame member 23 and the main gear 58. Preferably this cam has three sharply defined lobes as seen in Figure 2 which cooperate with and impart considerable movement to the cam follower lever 98 which is conveniently pivoted at its upper end on the cross portion 38 of the wire which locks the arms in position. This lever 98 is appropriately shaped as shown in Figure 2 to miss the various portions of the mechanism and to have its lower end 99 engage beneath the weight 19 so as to fully collapse the bellows attached thereto when any cam lobe lifts it to its maximum extent.

Since there are preferably three cam lobes the cam itself may be substantially triangular and thus permit the follower to drop sufficiently far between lobes to allow the weight to extend the bellows to its maximum when the doll is lying on its back. The cam by being positioned relatively close to the pivot point of its follower causes considerable multiplication of its throw so that the lower end 99 of the follower moves through such a long path that a prolonged cry issues from the mechanism at relatively widely spaced intervals for the cam being mounted on the spring shaft moves more slowly than any other part of the mechanism.

Whenever the motor runs down and its main shaft stops so that a cam lobe does not hold the follower elevated to its maximum position, the doll can be manually caused to cry by periodically inverting it and permitting the weight to actuate the crying mechanism.

The parts of the whole operating mechanism illustrated are all comparatively simple in construction and light in weight so that the doll can be made cheaply and not have too much weight for small children to handle. Because of the relative simplicity of the various parts, the construction cost is low and the resultant product sturdy to withstand the severe handling it may receive from exuberant children.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a doll of the type described, in combination, a body, a head, arms and legs, a spring motor fitted in said body, a frame for said motor, means journaled the arms and legs each for independent movement, a lever on each limb and extending within said body, a single rocker pivoted to said motor frame, means to oscillate said single rocker from said motor, and means to drive each lever from said rocker.

2. In a doll of the type described, in combination, a body, a head, arms and legs, a spring motor fitted in said body, a frame for said motor, means journaled the arms and legs each for independent movement about an axis transverse to said body, a lever on each limb and extending within said body, a rocker pivoted to said motor frame about an axis extending longitudinally of said body, means to oscillate said rocker from said motor, and means to move each lever from said rocker.

3. In a doll of the type described, in combination, a body, a head, arms and legs, a spring motor fitted in said body, a frame for said motor, means journaled the arms and legs each for independent movement about an axis transverse to said body, a lever on each limb and extending within said body, a rocker pivoted to said motor frame about an axis extending longitudinally of said body, means to oscillate said rocker from said motor, and means to move each lever from said rocker, the arm levers being directed oppo-

sitely to the leg levers, whereby the leg and arm on each side of the doll move in opposition.

4. In a doll of the type described, in combination, a body, a head, arms and legs, a spring motor fitted in said body, a frame for said motor, means journalling the arms and legs each for independent movement, a lever on each limb and extending within said body, a single rocker pivoted to said motor frame, means to oscillate said rocker from said motor, means to move each lever from said single rocker, a sounding element mounted on said body, a cam rotated by said motor, and means interposed between said cam and element to multiply the movement of the cam and apply the same to said element whereby the sounding element is actuated only during movement of the limbs.

5. In a doll of the type described, in combination, a hollow body, a head, separate arms and legs, a spring motor fitted in said body, a frame for said motor, means pivoting the arms and legs to said frame for independent movement each about a substantially transverse axis, a single rocker pivoted on said frame, means driven by said motor to oscillate said rocker, and a lever on each leg and arm engaging with said single rocker to actuate the legs and arms therefrom.

6. In a doll of the type described, in combination, a hollow body, a head, separate arms and legs, a spring motor fitted in said body, a frame for said motor, means pivoting the arms and legs to said frame for independent movement each about a substantially transverse axis, a single rocker pivoted on said frame, a crank pin on said motor, a slotted yoke on said rocker engaging said pin to operate the rocker, and means to drive the arms and legs from different portions of said single rocker.

7. In a doll of the type described, in combination, a hollow body, a clockwork housed therein, a cam rotatable by said clockwork, said body having a removable portion, a crying mechanism carried by said removable portion, said mechanism being positioned for operation from said cam when the portion is in position on said body.

8. In a doll having a motor therein, a stop for said motor, doll-position actuated means to release said stop, a crying mechanism in said doll, a weight to cock said mechanism for operation, said mechanism being so positioned in said doll that the weight cocks the same when the doll is positioned to release said stop, and means on said motor to periodically lift the weight to actuate said mechanism.

9. In a doll having a motor therein, a stop for said motor, doll-position actuated means to release said stop, a crying mechanism in said doll, a weight to cock said mechanism for operation, said mechanism being so positioned in said doll that the weight cocks the same when the doll is positioned to release said stop, and means on said motor to periodically lift the weight to actuate said mechanism, said weight being capable of alone actuating said mechanism whenever the position of the doll is changed sufficiently to permit gravity movement of the weight.

10. In a doll of the type described, in combination, a hollow body, separate arms and legs, a spring motor mounted in said body, a frame for said motor comprising parallel side plates extending longitudinally and fore and aft in said body, one of said arms having a shaft projecting therein and extending through bearings in said plates, a bushing sleeve in said other arm journaled on said shaft, means to prevent with-

drawal of said arms from said body, and means driven by said motor to oscillate said arms about the axis of said shaft.

11. In a doll of the type described, in combination, a hollow body, separate arms and legs, a spring motor mounted in said body, a frame for said motor comprising parallel side plates extending longitudinally and fore and aft in said body, one of said arms having a shaft fixed therein and extending through bearings in said plates, a bushing sleeve in said other arm journaled on said shaft, means to prevent withdrawal of said arms, a forked lever extending from each arm substantially parallel to said plates, a rocker engaged by said levers, and means to oscillate said rocker from said motor.

12. In a doll of the type described, in combination, a hollow body, separate arms and legs, a spring motor mounted in said body, a frame for said motor comprising parallel side plates extending longitudinally and fore and aft in said body, a pair of shafts mounted in said plates and extending outwardly therefrom, a bushing sleeve mounted in each arm and leg, said sleeves being journaled on the respective shaft extensions, means on said motor to prevent withdrawal of said arms and legs, and means to actuate said arms and legs about the axes of their shafts from said motor.

13. In a doll of the type described, in combination, a hollow body, a crying mechanism therein of the type actuated by a weight upon change of doll position, clockwork mechanism in said body, means on said clockwork to repeatedly raise said weight against the action of gravity when the doll is placed in a supine position, and means to stop said mechanism when the doll is in an upright position.

14. In a doll of the type described, in combination, a body, a motor fitted within said body and having a plurality of parallel shafts extending transversely of said body, arms independently journaled on one of said shafts, legs independently journaled on another of said shafts, and a single rocker oscillated by said motor to actuate all of said arms and legs independently.

15. In a doll of the type described, in combination, a hollow body having a removable section, a motor fixed in and to said body and removable through the opening formed on removal of said section, a crying mechanism mounted on the underside of said section, and means driven by said motor to cooperate with said mechanism to actuate the same.

16. In a doll of the type described, in combination, a hollow body having a removable section, a motor in said body removable through the opening formed on removal of said section, a crying mechanism mounted on the underside of said section and having a weight for actuating the same upon movement thereof, and means driven by said motor to intermittently lift the weight and release it to return by gravity.

17. In a doll of the type described, in combination, a hollow body, a spring motor in said body, a crying mechanism mounted within said body and having a weight for actuating the same upon movement thereof, a cam on a shaft of said motor, a lever fulcrumed at one end and engaged by said cam intermediate its ends, the free end of said lever being positioned to lift said weight and release the same to return by gravity when the doll is positioned with the weight above said lever.

18. In a doll of the type described, in com-

bination, a hollow body having openings therein for articulated arms and legs, said body having a large opening extending from between the arm openings nearly to the leg openings, a motor for actuating the arms and legs and having a length greater than that of said large opening, a trans-verse rod in said body above said large opening,

a forked portion on the upper end of said motor to fit over said rod, a post secured to the wall of said body opposite said opening and below said rod, and means to secure said motor to said post to be supported between it and said rod and spaced from the walls of said body.

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