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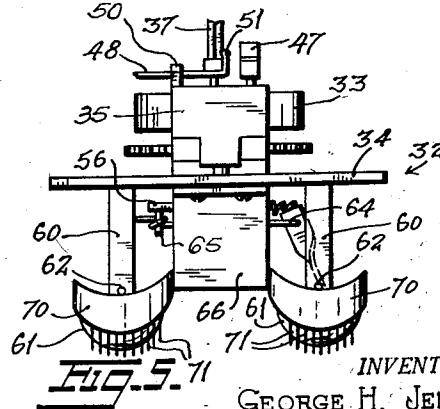
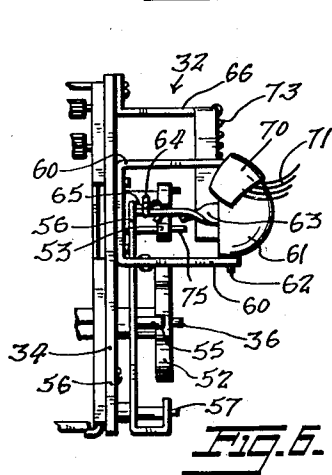
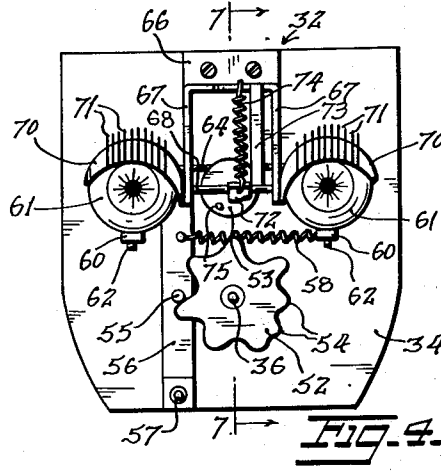
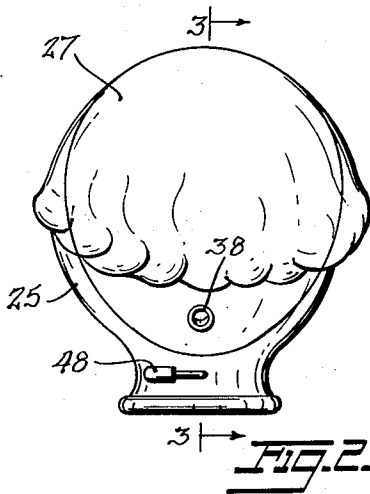
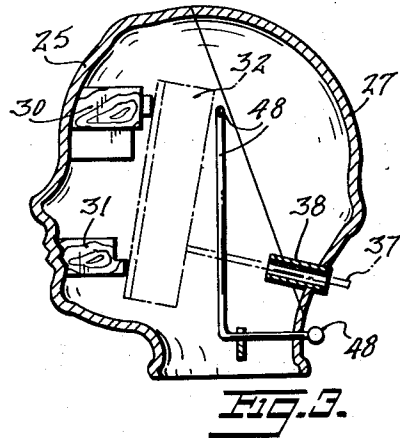
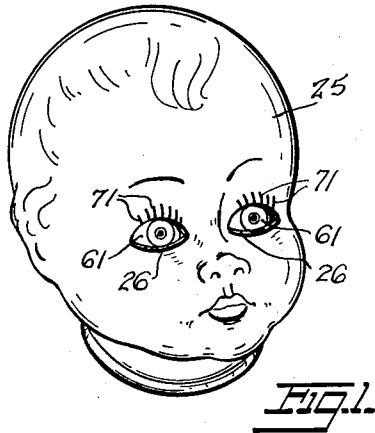
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POWER-OPERATED DOLL EYE AND LID MECHANISM

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2 Sheets-Sheet 1



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POWER-OPERATED DOLL EYE AND LID
MECHANISM

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1 Claim. (Cl. 46—135)

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This invention relates to new and useful improvements in dolls, mannequins and display devices and more particularly to variable rolling and blinking eyes for the same.

One object of the invention is the provision of control means for the eyes of a doll, mannequin or display device which means effects variable, predetermined amounts of rolling of the eyes.

Another object of the invention is the provision of eyelashes and lids for the said eyes which are automatically moved to close the eyes slowly and which snap back quickly to normal position to open the eyes.

Still another object of the invention is to provide simple and effective means for effecting the desired eye and eyelid movements.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claim in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a perspective view of a doll's head to which a form of the invention is applied.

Fig. 2 is a rear view of the said head.

Fig. 3 is a sectional view of the head on line 3—3 of Fig. 2 with the mechanism of the invention being indicated diagrammatically.

Fig. 4 is a frontal view of said mechanism removed from the doll's head.

Fig. 5 is a plan view of the mechanism.

Fig. 6 is a side elevational view of the mechanism with some parts broken away.

Fig. 7 is a sectional view on line 7—7 of Fig. 4.

Fig. 8 is a detached fragmentary, somewhat diagrammatic perspective view of a portion of the mechanism.

Fig. 9 is a frontal elevation of a modified form of the invention.

Fig. 10 is a side elevation of the mechanism of Fig. 9.

Fig. 11 is a plan view of the mechanism of Fig. 9.

Fig. 12 is a fragmentary enlarged sectional view taken on about line 12—12 of Fig. 11.

Fig. 13 is a sectional view on line 13—13 of Fig. 12.

The variable eyes, according to the first form of the present invention shown in Figs. 1 to 8, are illustrated mounted in a hollow doll's head 25 having therein a pair of eye holes 26 and having the rear portion 27 thereof separate from the front but connected thereto. By means of the separable rear head portion 27 the mechanism of the invention is mountable within the head on suitable blocks 30 and 31 secured in the latter by means of gluing or the like. As shown diagrammatically in Fig. 3, the said mechanism, generally designated 32, is mounted in such manner that the same is inclined rearwardly some-

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what, this position adapting the eye portions thereof to the holes 26 most beneficially.

The mechanism 32 may be of the mechanically powered type shown in Figs. 4-8 or of the electrically powered type shown in Figs. 9-13. The former type will be described first.

Referring to Figs. 4-8 the mechanically powered mechanism comprises a spring motor mounted between a frame plate 34 and a cover bracket 35 on a shaft 36, said motor having a key stem 37 projecting from the same through a suitable tube 38 fixed in the lower part of the rear head portion 27 as indicated diagrammatically in Fig. 3. Thus said stem projects from the head 25 to allow of motor 33 being wound up in familiar fashion. Fixed on the shaft 36 is a large gear 40 which meshes with a much smaller gear 41 on a shaft 42, said shaft having thereon another larger idler gear 43 which meshes with a spindle gear 44. The spindle gear 44 is connected by an idler gear 45 with another spindle gear 46 having fixed on the end thereof a stopping propeller 47. The construction is such that any object placed in the path of propeller 47 immediately halts the motor 33 because of the high gear reduction between the two. For this purpose a wire lever 48 such as that shown in Figs. 2, 3 and 5 may have its handle located outside of the head 25 and may have a horizontal portion guided in a loop 50 formed off the bracket 35, and a bent off end 51 projectable into the path of the propeller 47, see also Fig. 7.

The shafts 36 and 42 project through the frame plate 34, the former having secured on the end thereof a cam 52 and the latter a disc 53. As best shown in Fig. 4 the cam 52 is provided with a series of humps 54 spaced different distances apart and each projecting a different distance from the center thereof. The periphery of cam 52 is engaged by a pin 55 in a lever 56 pivoted to frame plate 34 at 57. A spring 58 maintains engagement of the pin 55 with cam 52. On either side of the shaft 42 a U-shaped bracket 60 has its base secured to the plate 34 and its arms projecting outward therefrom one above the other. Between the ends of the arms of each bracket 60 is a glass or plastic hemispherical eye ball 61 having upper and lower pivot pins 62 journaled in the arms. Projecting rearward from each eye ball 61 is a link 63, both links being interconnected at their rear ends by a universal wire bar 64. As best shown in Fig. 5 the bar 64 is looped about a pin 65 projecting from the upper end of the follower lever 56 described above.

The construction is such that as cam 52 rotates the humps 54 thereof reciprocate the lever 56 varying amounts at differently spaced time periods, such reciprocations acting through the bar 64 and the links 63 to roll the eye balls 61 on their pivot pins 62 variable amounts.

A bracket 66 is secured to the frame plate 34

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above the shaft 42 and has a pair of depending arms 67 located on opposite sides of but forward of the disc 53, said arms serving as journal supports for a pivot rod or spindle 68 whose ends lie adjacent the inner edges of the eye balls 61. Fixed on each end of spindle 68 is the inner edge of a crescent shape eyelid 70 which normally covers the upper part of the associated eyeball 61. Suitable strands of hair are fixed to the forward edge of each eye-lid to form eye-lashes 71. Between the arms 67 the spindle 68 has fixed thereon a lever 72 whose one end is held against a limit stop 73 by a spring 74 to maintain the eyelids 70 in their normal positions. The other end of lever 72 is positioned in the path of a plurality of pins 75 projecting from the face of disc 53.

The construction is such that as disc 53 rotates each pin 75 rocks the lever 72 slowly to lower the eye-lids 70 over the fronts of the eye-balls 61, said lids being snapped back to their normal positions by spring 74 when the pin disengages the lever.

In order to make successive movements of the eye-lids 70 vary in amount and in time duration, the lever 72 has the end thereof acted on by the pins 75 foreshortened at one side and the pins 75 are spaced different distances from the center of disc 53 and are of different lengths, see also Fig. 8.

It will be seen therefore that simple and efficient mechanically powered means have been provided to roll the eyeballs 61 and also to blink the eye-lids 70, said rolling and blinking movements being variable in amount and time duration.

Referring now to Figs. 9 to 13 the electrically powered mechanism will be described, such description utilizing the same reference numerals as above, with a prime added in so far as they are applicable.

In this form of the invention the eyeballs 61' may be complete tear-drop shaped spheres which are pivotally mounted in the same manner as described above but have wire loops 75 projecting from their rear ends and engaged by upturned ends of a universal wire bar 64' substantially identical with the bar 64. Bar 64' like the bar 64 is looped around a pin 65' projecting from a follower lever 56' pivoted at 57'. The follower lever 56' is like the follower lever 56 in all respects except that it is located slightly differently. Like lever 56, the lever 56' is acted upon by a cam 52' on a shaft 36' and substantially identical with the cam 52.

The eye-lids 70' of the modified construction are identical with those described and like the latter are fixed on the end of a spindle 68' journaled in a bracket 66'. Spindle 68', however, carries an arm 77 to which is pivotally connected a depending link 78 secured at its upper end to the armature 80 of an electromagnet 81. The magnet armature is held in its normal position by a spring 82 which also holds the eyelids 70 in normal position. Magnet 81 is mounted on a frame plate 83 which is supported by legs 84 above a frame plate 34' on which the main portion of the mechanism is mounted and which is substantially like the frame plate 34 described above. The operation of magnet 81 is controlled by a pair of electrical contacts 85 mounted on and insulated from the frame plate 34', and interposed in one of the line leads 86 from an outlet plug 87 to the magnet. The contacts 85 are closed to operate the magnet by the engagement of pins 88 projecting laterally from the humps 54' of cam 52' with

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an ear 90 bent up from the uppermost contact. The humps 54' project differing distances from the center of cam 52' and therefore the pins 88 can be located differing distances from the center of the cam to vary the amount of time the contacts 85 are closed by each pin.

The shaft 36' is driven slowly by an ordinary synchronous clock motor 91 mounted behind the frame plate 34' and connected directly with the plug 87 by the leads 86. Thus when the plug is connected with a suitable source of electric power, the motor 91 immediately begins to rotate the shaft 36' and the cam 52' thereon.

In order to secure the electrically powered mechanism in the doll's head, the frame plates 34' and 83 may be bolted to the blocks 30 and 31 and adjusting screws 92 mounted in the frame of motor 91 may be extended into contact with the wall of said head, see Figs. 3, 9 and 11.

It will be seen, therefore, that essentially the only difference in the two described forms of the invention is the power driving means.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed within the scope of the invention as defined in the appended claim.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

An eyeball and eyelid device for a doll or the like which comprises a pair of simulated eyeballs pivoted on their vertical axis, a drive shaft, an electric motor to rotate said shaft slowly, a cam fixed on said shaft and having a plurality of humps extending different distances from the center of the cam, a follower lever rocked different amounts by said cam, a universal bar connected to said lever and also to said eyeballs to roll the latter different amounts, a lateral spindle located between the eyeballs, a crescent shaped eyelid secured to either end of the spindle and normally covering the upper part of the eyeball, spring means for maintaining the eyelids in normal position, an electromagnet having an armature, an arm on said spindle, a link connecting the arm with the armature to blink the eyelids when the magnet is energized, and means controlled by said motor driven shaft to effect periodic energizations of said magnet for different periods of time, including a circuit for the magnet, a pair of normally open contacts in the circuit and a plurality of pins projecting laterally from the humps of the cam to close the contacts for different time periods.

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