

Oct. 8, 1968

R. GARDEL ET AL

3,404,483

DOLL EYE CONTROL MECHANISM

Filed Jan. 21, 1965

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FIG. 1

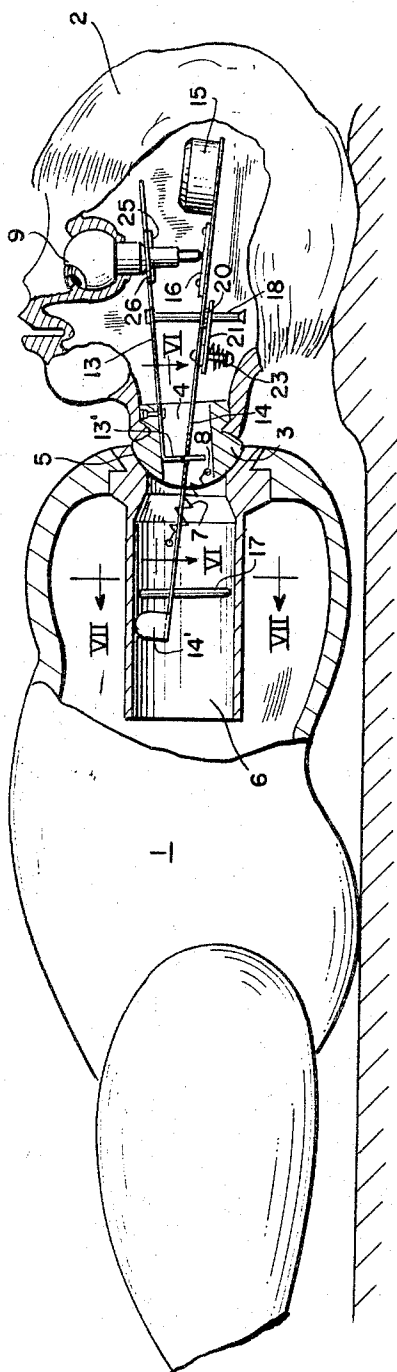
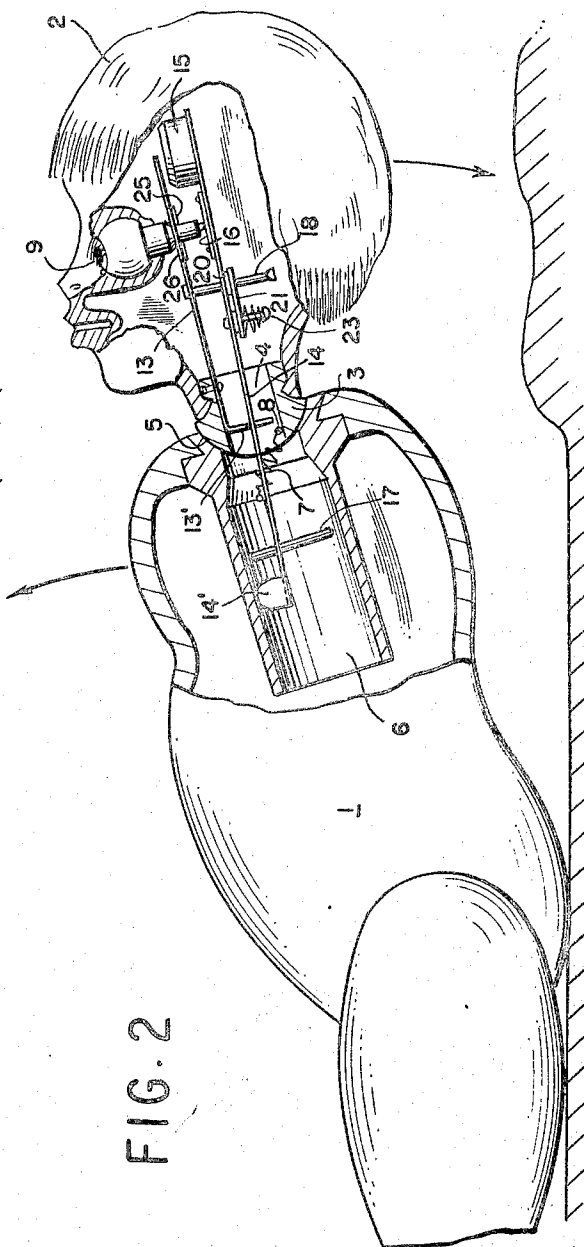


FIG. 2



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FIG. 3

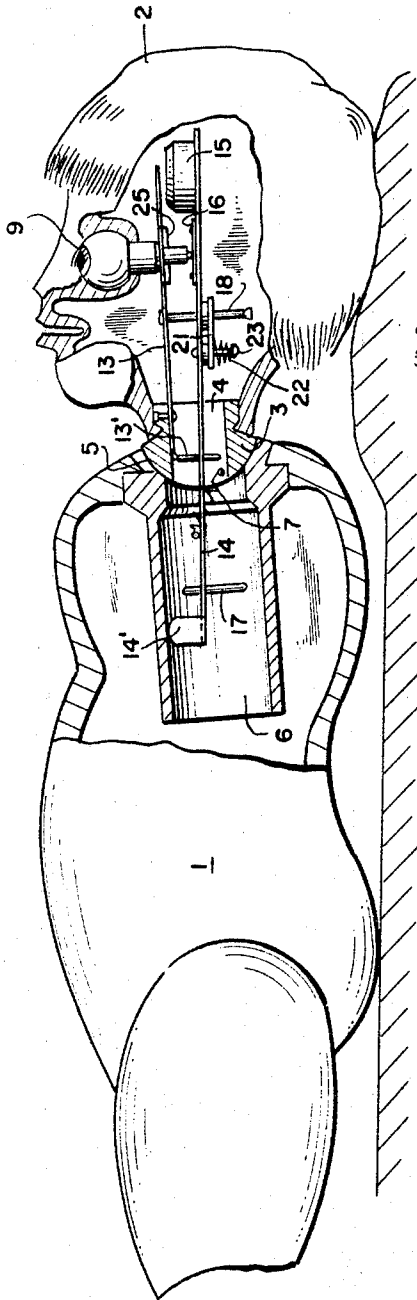
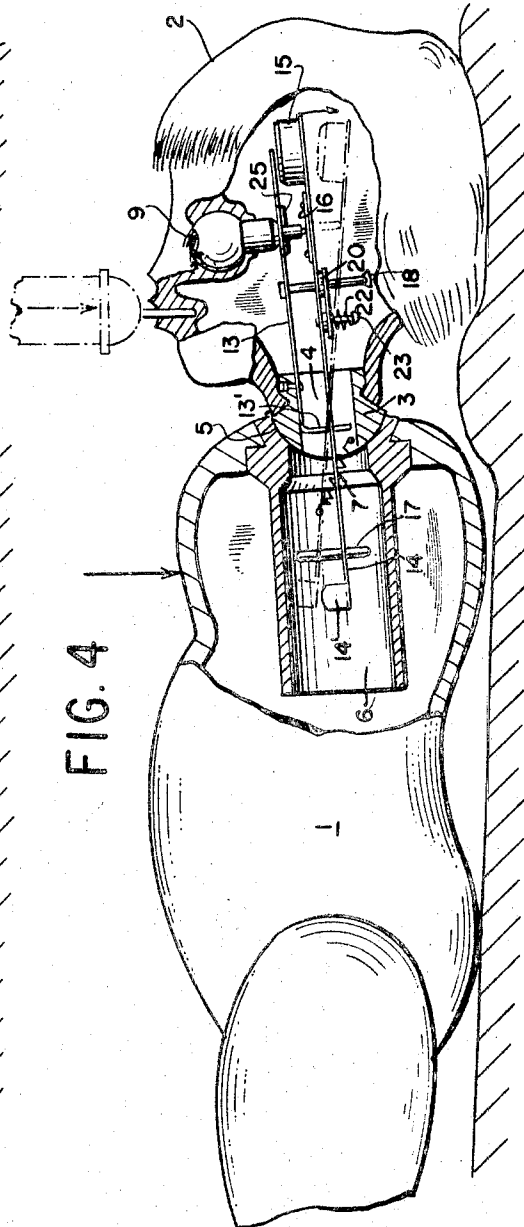


FIG. 4



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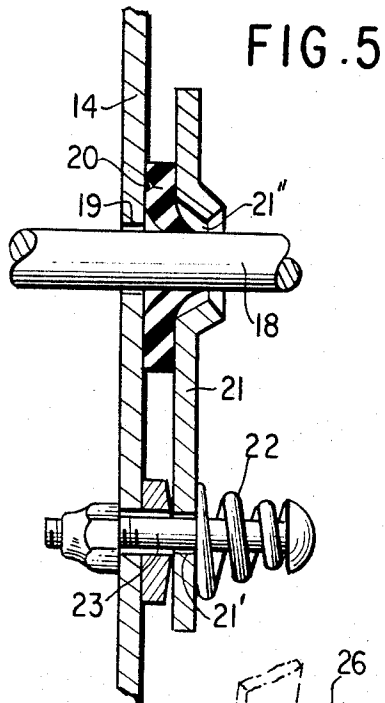
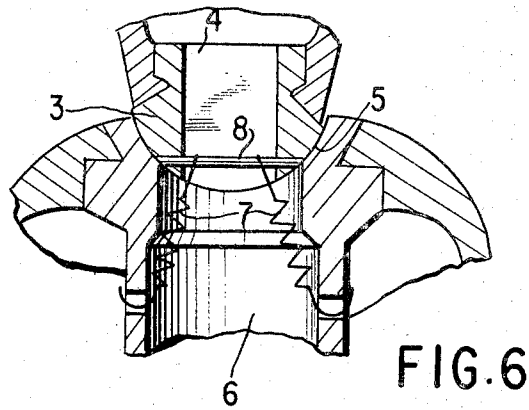
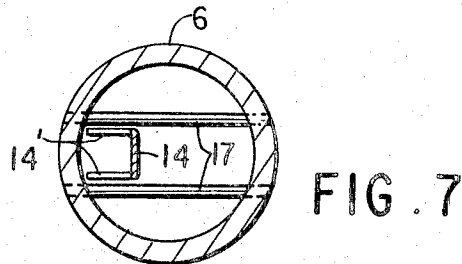
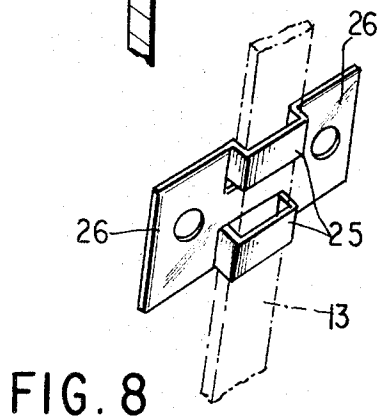
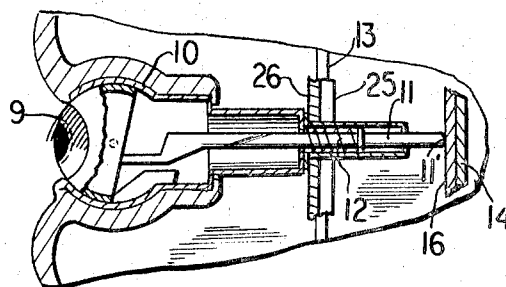
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DOLL EYE CONTROL MECHANISM

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DOLL EYE CONTROL MECHANISM

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7 Claims. (Cl. 46—135)

This invention relates to a doll eye control mechanism and particularly such a mechanism designed to control the opening and closing of a doll's eyes as a function both of the doll's attitude (erect or prone) and of the relative positions of the doll's head and body.

While other effects could be achieved by varying the arrangement of the parts, the invention is designed particularly to permit a doll with closable eyes to be placed in lying-down position, with the eyes remaining open as long as the doll is not touched in a certain manner; when a bottle or the like has been pressed against the doll's mouth (or when the upper part of the body is pressed downward), changing the angular relation between the head and body, the eyes remain open briefly and close very slowly, remaining closed after the pressure is removed and until the doll is picked up.

A practical example of a mechanism capable of effecting the result just described is shown in the accompanying drawings, wherein

FIG. 1 represents a side elevation of a doll, lying down with eyes closed in the normal manner, parts being broken away to show the control mechanism and parts being in section;

FIG. 2 represents a view similar to FIG. 1 with the doll's body and head lifted somewhat, the head having tilted back so that the mechanism has caused the eyes to open, as if the doll were being held erect;

FIG. 3 represents a view similar to FIG. 1 with the doll lying down while the eyes are held open by the control mechanism, as in FIG. 2;

FIG. 4 represents a view similar to FIG. 1, the relative positions of the head and body having been altered by downward pressure from the positions of FIG. 3 and the control mechanism having been freed to start the slow closing movement of the eyes (full lines, open; broken lines, closed);

FIG. 5 is a detail vertical section, in the axial plane parallel to FIGS. 1 to 4, showing part of the slow-motion friction device;

FIG. 6 is a detail vertical section on the line VI—VI of FIG. 1;

FIG. 7 is a detail horizontal section on the line VII—VII of FIG. 1;

FIG. 8 is a detail perspective view showing the engagement of the fixed vertical strip with the eye assembly support, and

FIG. 9 represents a detail vertical section through one of the eye assemblies.

Referring to the drawings the doll body (torso) 1 and head 2 are shown as being molded and hollow, the neck opening of the head being closed by a plug 3 of wood or plastic traversed by a vertical passage 4. The bottom surface of the plug 3 is approximately hemispherical and rests against a correspondingly shaped annular surface 5 at the upper end of a rigid tube 6 securely mounted in the neck opening of the body 1 and extending a substantial distance into the body. (When such terms as "vertical," "horizontal," "upper" or "lower" are used herein it will be understood that they refer to a doll in an erect attitude.)

The head is held on the body by means of a pair of springs 7, 7 (FIG. 6) extending from a bar 8 at the rear and near the bottom of the passage 4 to points on each side of the tube 6 nearer the front than the rear thereof. The angularity of the springs 7, 7 tends to tilt the head

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slightly backward, as will be apparent from FIGS. 1 to 4, and to hold it in that position except when a counteracting force is applied, as shown in FIG. 4.

Each eye mechanism (FIG. 9) includes an eyeball 9 mounted in the eye socket 10 and weighted in the usual manner for normal opening and closing by gravity according to the attitude of the head, with the addition of a plunger 11 urged away from the eyeball by a light spring 12 but movable into engagement with the eyeball to open the eye, regardless of gravity, by the application of a forward acting force to the rear end 11' of the plunger.

The control mechanism includes a vertical metal strip 13 fixed near its lower end to the front wall of the passage 4 and extending upward into the head beyond the eye assemblies, to which it may also be attached, as by passing through loops 25 formed in a plate 26 (FIG. 8) which connects and braces the rear parts of the eye assemblies. The lower end of strip 13 is bent rearward, at 13', and may be slotted or otherwise shaped to engage loosely a longer vertical metal strip 14, the point of loose engagement constituting a pivot. The strip 14 has a weight 15 at its upper end, and pusher plate 16 below the weight and extending laterally far enough to engage the rear ends of the eye plungers 11, for pushing them forward to open the eyes. The strip 14 is provided at its lower end with a rounded projection 14' (integral or attached) and designed to contact the front wall of the tube 6 under certain conditions (FIGS. 1, 2, 3) for purposes explained below. The movement of the strip 14 is guided by the provision of parallel spaced guides 17 extending across the tube 6 as shown in FIG. 7.

In addition to their connection at the pivot point, the strips 13 and 14 are connected, between said pivot and the eye assemblies, by a slow-motion friction device comprising a smooth rod 18 fixed at one end to the strip 13 and passing horizontally through a hole 19 in the strip 14. The rod 18 is engaged by a close fitting vinyl washer 20 which is held against one surface of the strip 14 by a retaining lever 21 having a small hole 21' near one end and a larger tapering hole 21'' through which the rod passes. The lever 21 is permitted to move with respect to the strip 14 by the provision of the small strong spring 22 on a headed bolt 23 which passes through the small hole in the lever and holds the lever on the strip 14. When the rod 18 moves in the direction toward lever 21 (right in FIG. 5) the lifting of the lever away from strip 14 and the tapering shape of hole 21'' reduce the friction of the washer 20 on the rod and permit a quicker response than in the case of movement in the opposite direction (left in FIG. 5) when the washer is firmly backed by the flat side of strip 14 adjacent hole 19, the device just described constituting a movement-delaying device.

The operation of the mechanism is illustrated in FIGS. 1 to 4. In FIG. 1 the doll is lying down as flat as possible, the head being tilted slightly forward. The lower end 14' of the strip 14 is resting against the tube 6 but the angle of the head is such that the weight 15 can hold the pusher plate 16 away from the eye plungers 11, permitting them to extend rearwardly so that the eyes close normally.

In FIG. 2 the upper part of the body is being lifted, the head tilts back slightly by its own weight assisted by the angular pull of the springs 7, 7, and the eye assemblies thus move toward the strip 14, the plungers 11 being pushed in to open the eyes.

In FIG. 3 the doll, with all parts positioned as in FIG. 2 has been laid down gently so that the eyes remain open. The head and body are aided in keeping this position by the tension of the springs 7, 7.

In FIG. 4, pressure is being applied to the head and/or body either by pushing a "milk bottle" B against the doll's mouth or merely by pressing down on the upper part of the body. This pressure causes the head and body to assume the relative position of FIG. 1, but the slow-motion

friction device 18-23 prevents the weight 15 from descending quickly, causing it instead to move very gradually downward (toward the broken line position) as the rod 18 is drawn through the washer 20, permitting the eyes to close in a correspondingly slow "drooping" manner. This result is very interesting and appealing, particularly when it follows the "feeding" of the doll, as would be expected.

Since the tube 6 completely encloses all parts of the mechanism extending into the body it will be evident that the mechanism could be used with a stuffed body as well as with the molded body shown. A suitable form of eye mechanism, with plungers operable by a pusher plate, is shown in more detail in copending application Ser. No. 375,803, filed June 17, 1964 (now Patent No. 3,230,666, Jan. 25, 1966; and see Patent No. 3,295,253, Jan. 3, 1967); any eye assembly capable of functioning in the manner described could be used in the present combination. By a slight modification of the point of engagement of the plungers 11 with the eyeballs, the plungers could act to open the eyes instead of closing them; in this case a doll appearing to sleep could be made to awaken slowly when pushed, as illustrated in FIG. 4.

While the eye control mechanism is shown and described as designed for the control of doll eyes, it will be appreciated that the eyes of other figures (e.g., animals) could be actuated in a similar manner with no more than minor adaptations of the mechanism. The slow-motion device, per se (18-23) can evidently be utilized to control the rate of movement of relatively movable parts in other types of mechanisms. Conversely, other types of movement-delaying devices might be functional in the eye control mechanism disclosed herein, but the rod and washer device (18-23) has the advantages of simplicity and effectiveness.

It will be understood that various changes may be made in the form, construction and arrangement of the several parts without departing from the spirit and scope of the invention, and hence we do not intend to be limited to the details shown or described herein except as the same are included in the claims or may be required by disclosures of the prior art.

What we claim is:

1. In combination with a doll having a head with eyes designed to open and close freely and mechanical means mounted in the head and operable to open or close the eyes upon actuation of said means, a torso articulated to the head and a resilient connection between said head and body; eye control mechanism separate from said eyes and from said mechanical means including a part fixed with respect to the interior of the head and a part movable with respect to said fixed part, the movable part being elongated and extending from a point adjacent the eyes to a point within the doll torso, a pusher on said movable part in a position to actuate the mechanical means, a pivotal mounting fixed to the head for said movable part, a weight on said movable part for moving it about its pivot, a stop member fixed in the doll torso in a position to be contacted by the movable part to pre-

vent said weight from moving said part and to be moved out of contact with the movable part to permit said weight to move said part, and a movement-delaying device connecting fixed part and said movable part to regulate the speed of movement of the moveable part when such movement is permitted.

2. The combination according to claim 1 in which the stop member is tubular, is fixed within the upper portion of the doll torso and has an inner wall surface in a position to be contacted by the movable part of the eye control mechanism.

3. In combination with a figure having a head with eyes gravity actuated to open and close freely and mechanical means operable to open and close the eyes upon actuation of said means, eye control mechanism separate from said eyes and from said mechanical means including a part movable with respect to the eyes, said part being adapted to actuate said mechanical means, a movement-delaying device connected to said movable part and operative to regulate the speed of movement of the movable part in one direction, a torso articulated to the head and means rigid with the torso adapted, in one position of the torso with relation to the head, to cooperate with eye control mechanism and prevent movement of the movable part of the eye control mechanism and, in another position of the torso with relation to the head to permit movement of said part.

4. The combination according to claim 3 in which the articulation of the torso to the head includes resilient means biasing the torso and head toward the position in which movement of the movable part of the eye control mechanism is prevented.

5. The combination according to claim 3 in which the eye control mechanism extends from the head into the torso, the means rigid with the torso being adapted, in one position, to prevent movement of the movable part of the eye control mechanism and, in another position, to permit movement of said part.

6. The combination according to claim 5 in which the means rigid with the torso is a tubular stop member into which the eye control mechanism extends.

7. The combination according to claim 6 in which the articulation of the torso to the head includes resilient means biasing the torso and head toward the position in which the tubular stop member bears against the movable part of the eye control mechanism to prevent movement of the latter.

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