Dec. 9, 1969 T. WOLF 3,482,350

MOVABLE DOLL EYE INCLUDING CROSSED SLOTS CARRYING ROTATION CAUSING MEANS

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Fig. 1.

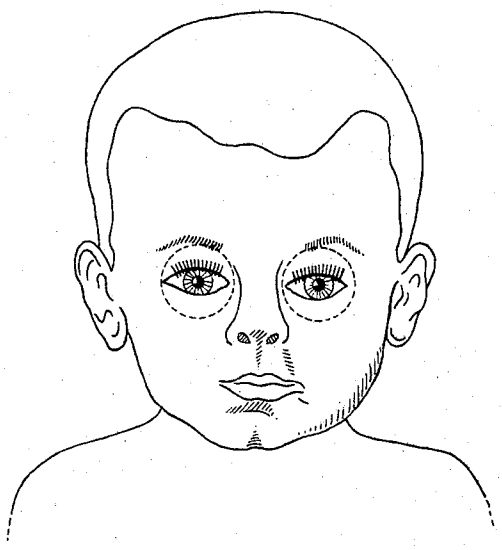


Fig. 2.

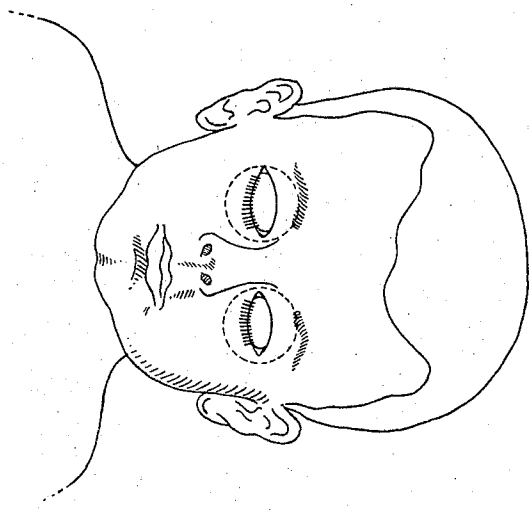
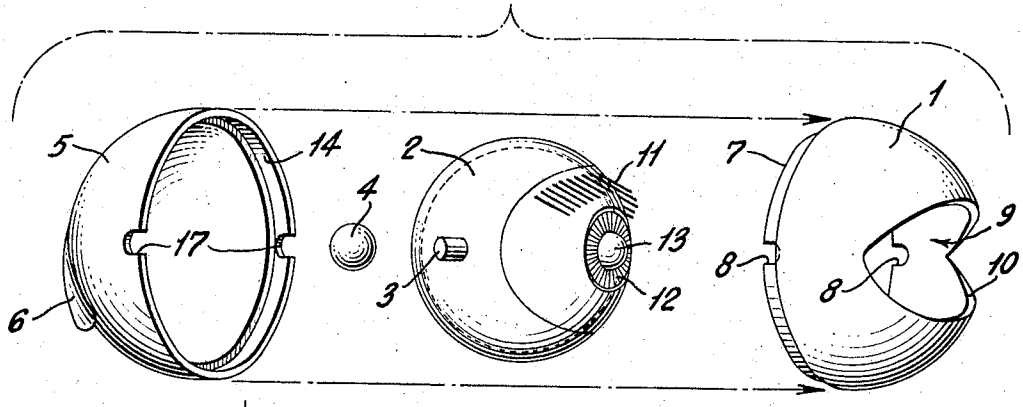


Fig. 3.



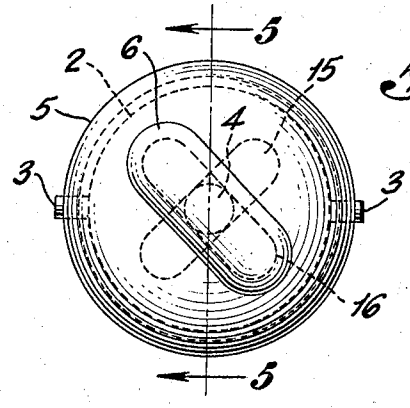




Fig. 4.

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Fig. 5.

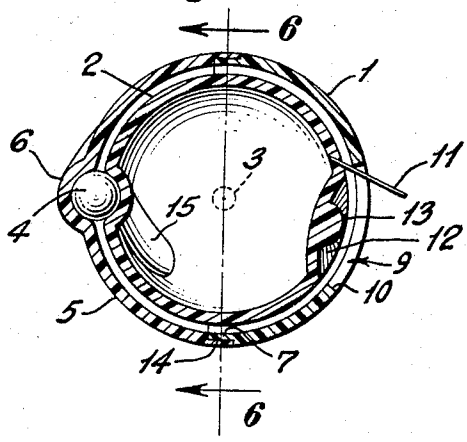



Fig. 6.

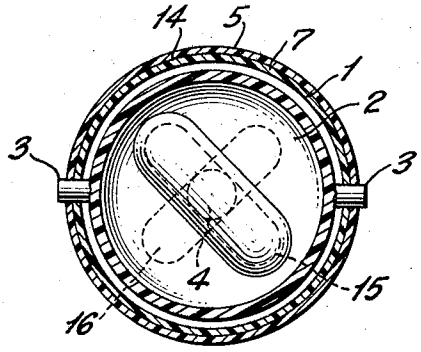
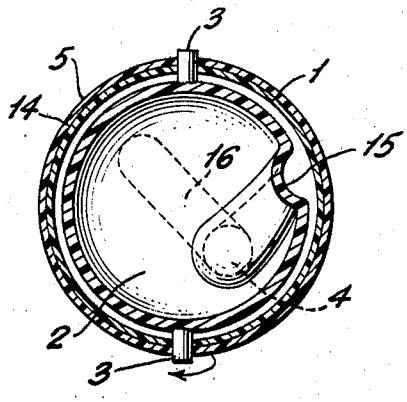



Fig. 7.




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3,482,350

# MOVABLE DOLL EYE INCLUDING CROSSED SLOTS CARRYING ROTATION CAUSING MEANS

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Int. Cl. A63h 3/40
U.S. Cl. 46—169 11 Claims

## ABSTRACT OF THE DISCLOSURE

This invention relates to movable eyes for toys and the like, and more specifically to eyes for toys and the like having eyes positioned in a first manner when the toy is in an upright or prone position, the eyes being positioned in a second manner when the toy lies on one side thereof.

The invention further relates to a ball member, slidable in each of two slots, one of these slots being formed in a first member, and the second slot being formed in a second member movable relative to the first member. The slots are positioned at an angle of approximately 90° with respect to each other. Movement of said ball due to gravity or otherwise in the slots imparts movement of one of said members relative to the other.

The prior art discloses many methods and structures for moving the eyes of toys and the like. However, the prior art has not set forth a doll or the like having eyes that are open when the doll is in an erect position, in a prone position or lying on its back, the eyes being closed only when the doll is lying on its side. Dolls and the like as known in the prior art have had eyes which were closed only when the doll was lying on its back. Such eye operation is not in accordance with the normal actions and sleeping habits of human beings and is therefore not an accurate simulation thereof.

It is known that humans, when sleeping, normally sleep on their side and, at that time, while asleep, will have their eyes closed. The present invention provides a doll or the like having eyes which accurately simulate the eye motions of sleeping humans in a manner unknown in the prior toy art.

The prior art further does not disclose any specific means for closing and opening the eyes of dolls and the like wherein a weighted ball member is positioned within a closure formed by two annular slots, each slot being positioned in a different member and one of said members being movable relative to the other wherein the slots are positioned at an angle to each other of approximately 90° and overlap each other to form the closure for the ball and maintain the ball within the closure. The force of gravity on the ball causes the slots to rotate relative to each other, rotating the eyeball member to an open or closed position. The slots are so positioned that the eyes are closed when the doll is lying on its side, and are open for all other positions which the doll can attain.

It is therefore an object of this invention to provide a doll, toy or the like having movable eyes which close when the doll, toy or the like is lying on its side and which are open for all other positions which the doll can attain.

It is a further object of this invention to provide means for moving the eyes or the like of dolls, toys or the like by causing an eyeball member to be rotated by the force of gravity upon a weighted ball position in a chamber formed by two slots, one slot being in the eyeball member of the eye and the second slot being in an outer eyeball holder of the eye, the movement of the ball causing the eyeball to move with respect to the outer eyeball holder.

It is a still further object of this invention to provide a doll, toy or the like, having movable eyes which are



closed when the doll, toy or the like is lying on its side and are open when the doll is in any other position which it can attain, by causing an eyeball member to be rotated by an external stimulus such as the force of gravity upon a movable weight, such as a ball positioned in a chamber formed by two slots. One slot is contained in the eyeball member and the second slot is contained in an outer eyeball holder, the slots being poistioned at an angle wtih respect to each other to form said chamber, wherein the movement of the weight causes the eyeball to move with respect to the outer eyeball holder.

It is still another object of the present invention to provide a low cost and easily manufactured gravity operated eye opening and closing member for dolls, toys and the like.

The above objects and still further objects of this invention will become apparent to those skilled in the art from the following detailed description of a preferred embodiment thereof, wherein:

FIGURE 1 is a view of a doll in the upright position with the eyes thereof open;

FIGURE 2 is a view of a doll lying on its side with the eyes thereof closed;

FIGURE 3 is an exploded perspective of the several elements which compose the eye in accordance with the present invention;

FIGURE 4 is a rear view of the eyeball in accordance with the present invention;

FIGURE 5 is a cross-sectional view taken along the line **5**—**5** of FIGURE 4;

FIGURE 6 is a cross-sectional view taken along the line **6**—**6** of FIGURE 5, and

FIGURE 7 is a cross-sectional view of the eye in its closed condition.

FIGURE 1 shows a doll in accordance with the present invention sitting or standing in the upright position or lying on its back or in a prone position, the eyes being open for each of these positions.

FIGURE 2 shows a doll in accordance with the present invention lying on its left side with closed eyes to simulate sleep as in human beings.

A doll eye or the like which is capable of performing the function as shown in FIGURES 1 and 2, supra, is set forth in exploded perspective in FIGURE 3. The eye includes a front half outer shell **1** with an annular depressed rim portion **7** and a pair of apertures **8** positioned 180° apart on the depressed annular portion **7**. The front half outer shell also includes a substantially elliptical cut-out portion **9** defined by a rim portion **10** through which the eyeball (to be described later) is seen. The eye further includes an eyeball or eye member **2** having a pair of trunnions **3** positioned at opposite ends of the eyeball along a diameter thereof, both trunnions being rotatable about a line through the trunnions and passing through the center of the eyeball. Movement of the eyeball is provided by rotation thereof on the trunnions **3**. The eyeball also includes eyelashes **11** which can serve to restrict the movement of the eyeball within the outer shell of the eye by contacting the edge **10**. The eyeball also includes a structure representative of the pupil **12** and the lens **13**.

The eye further includes a weighted ball member **4** which can be a heavy material such as iron, steel, lead, copper or the like, and should have sufficient weight relative to the eyeball and the rear half outer shell **5** to provide a motion of the eyeball with respect to the rear half outer shell by the force of gravity on the ball **4**.

The rear half outer shell member **5** has a rabbeted portion **14** for receiving the annular depressed member **7**, the rabbeted member further defining a pair of apertures **17** for alignment with the apertures **8**. The pairs of apertures **8** and **17** secure the trunnions **3** within the outer

shell formed from the front half outer shell **1** and the rear half outer shell **5**. The rear half outer shell **5** further includes a diagonal hollow rib **6** formed therein (better shown in FIGURES 4 through 7).

The eyeball member **2** further includes a hollow rib having a cam **15** formed therein for cooperation through ball **4** with a cam slot **16** formed in hollow rib **6** of the rear half outer shell **5**, said slot **15** (not shown in FIGURE 3) being positioned at an angle of approximately 90° with respect to the slot **16**. The slot **15**, at the point of overlap with the slot **16**, forms a closure therewith for containment of the weighted ball member **4**. Movement of the ball member **4** along the slot **16** will react against the wall of slot **15** to cause the eyeball member **2** to be rotated to maintain the closure for containment of the ball member **4**, thereby rotating the eyeball member in a counter-clockwise or clockwise direction, as the case may be. Motion of the eyeball member **2** is limited in either direction of rotation thereof by the eyelashes **11** positioned thereon although such motion can also be restricted by providing the proper length to the slots **16** and **15**.

Referring now to FIGURES 4 to 6, there is shown (FIGURE 4) the rear half of the outer shell **9** including the hollow rib **6** and groove **16** therein. Also shown is the slot **15** (not shown in FIGURE 3) which is formed in the eyeball member **2**. The trunnions **3** are shown supporting the eyeball **2** within the outer shell at the apertures **8** and **17** thereof. The weighted ball member **4** is positioned within a closure formed by the slots **15** and **16**, the slots being positioned transverse to each other.

The slot **16**, positioned in the rear half outer shell **5**, is stationary since it is formed in a stationary member. The slot **15** is rotatable since it is formed in the eyeball **2**, the eyeball being rotatable about the trunnions **3** to provide a vertical rotating motion as observed from FIGURE 4.

It can be seen from an observation of FIGURE 4 that rotation of the eye member by 90° so that the trunnions **3** are vertical will cause the weighted ball member **4** to travel downwardly in the slot **16**, thereby rotating the eyeball member **2** until the slot **15** and the slot **16** again overlap but this time with the ball **4** at one of the extreme positions of the slots **15** and **16**. The eye is shown in such extreme position in FIGURE 7.

In FIGURE 7 the doll has been placed in the position as shown in FIGURE 2. Accordingly, the ball member **4** as shown in FIGURE 4 has moved upwardly to the left, thereby causing the ball member **4** to move to the upper left extreme portion of the slot **16** and causing the slot **15** to move upwardly. Since FIGURE 4 is a view of the rear of the eye, it can be seen that such motion of the eyeball will be a downward motion at the front of the eye and therefore a closing of the eye. Such closing is halted at the proper position by either the eyelash **11** on the eyeball **2** or by an adjustment of the length of the slots **15** and **16** to restrict the motion of the ball member **4** therein.

It can be seen that for all other positions of the doll the ball member **4** will be either in the central position as shown in FIGURE 4 or will move downwardly to the right to even further open the eyes. Such further opening of the eyes is restricted by the eyelash **11**, thereby restricting the ball motion past the position shown in FIGURE 4, i.e. the center of the groove **16**. It is obvious that this center position need not be the normal rest position of the ball member **4** but, on the contrary, such rest position could be the other end of the slot **16**, such position being merely a matter of design.

Though the specific embodiment has been described with the slots **15** and **16** positioned at an angle of about 90° with respect to each other, this positioning could be at any angle so long as a closure is provided for the ball member **4**.

It should be further understood that the specific embodiment is described assuming a non-rotatable head



member thereby requiring the doll be positioned on its side to provide eye closure. Such eye closure could also be obtained by rotation of the head toward the left as shown in FIGURE 1 when the doll is resting on its back. It is therefore clear that eye operation is actually dependent upon the position of the eye, per se, relative to the earth's gravitational field or the external stimulus rather than the position of the doll itself. The external stimulus need not be a gravitational field but could be one of a multitude of stimuli. For example, a magnetic field operating on a magnetic ball member **4** could be used.

It is also obvious that proper alteration of the slot positions would allow the eye to close when the doll is positioned on its right side rather than the left side as provided in the preferred embodiment.

Although the invention has been described with respect to a specific embodiment, many other variations, changes and modifications thereof will immediately become obvious to those skilled in the art from a reading of the above disclosure. It is therefore the intention that the claims appended hereto be interpreted as broadly as possible in the view of the prior art to fully encompass such variations, changes and modifications of the present invention.

What is claimed is:

**1.** An eye for a doll or toy which comprises an eyeball member, means associated with said eyeball member for rotatably mounting said eyeball member and limiting the rotation thereof to about one axis thereof, said mounting means including means surrounding said eyeball member and including a slot defined therein, a slot defined by said eyeball member, said slots being positioned with respect to each other to overlap and form a closure therein and means for rotating said eyeball member positioned in said closure in contact with said eyeball member and said eyeball member surrounding means.

**2.** An eye for a doll or toy as set forth in claim **1**, wherein said means for rotating said eyeball member is a gravity actuated weight.

**3.** An eye for a doll or toy as set forth in claim **1**, further including means to limit the range of rotation of said eyeball member.

**4.** An eye for a doll or toy as set forth in claim **2**, further including means to limit the range of rotation of said eyeball member.

**5.** An eye for a doll or toy as set forth in claim **3**, wherein said means to limit the range of rotation of said eyeball member is an eyelash coupled to said eyeball member.

**6.** An eye for a doll or toy as set forth in claim **4**, wherein said means to limit the range of rotation of said eyeball member is an eyelash coupled to said eyeball member.

**7.** An eye for a doll or toy as set forth in claim **1**, wherein said slots are positioned substantially normal to each other.

**8.** An eye for a doll or toy as set forth in claim **2**, wherein said slots are positioned substantially normal to each other.

**9.** An eye for a doll or toy as set forth in claim **5**, wherein said means surrounding said eyeball member defines an aperture therein for contacting said eyelash to restrict rotation of said eyeball member.

**10.** An eye for a doll or toy as set forth in claim **6**, wherein said means surrounding said eyeball member defines an aperture therein for contacting said eyelash to restrict rotation of said eyeball member.

**11.** An eye for a toy, said eye comprising a shell, an eye member pivotally mounted therein, means within the shell for pivoting the member from an open position to a closed position as the pivotal axis is moved in a plane through an angle of 90° from a horizontal position to a vertical position and wherein said means comprises a groove in the shell making an angle with the pivotal axis, a groove in the member making an angle with the pivotal

axis and intersecting the first mentioned groove, and a heavy ball retained in the intersection.


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