An eye includes a socket, an eyeball, an eyelid and at least two electromagnetic units. The socket defines a spherical bay. The eyeball is received in the spherical bay. One end of the eyelid has an eyelash, the other end of the eyelid has a magnetic element corresponding to the eyelash. The at least two electromagnetic units are disposed on different positions of an upper side of the socket. In this case, the eyelid is movably arranged between the socket and the at least two electromagnetic units.
EYE FOR TOY

BACKGROUND

[0001] 1. Technical Field
[0002] The invention relates to toys, and more particularly to an eye for a toy.
[0003] 2. Description of Related Art
[0004] As manufacturing technology develops, requirements for toys and novelties to feature enhance and innovative function increase. One example is the authenticity of behavior exhibited by human or animal figures, and specifically, the eyes of such a toy.
[0005] Currently, eyes of toys can be operated to wink by an electric motor which promotes a mechanical transmit mechanism. However, the electric motor is easily damaged and has a short lifetime, the control structure is complicated and action of the mechanical eyes is not lifelike.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] FIG. 1 is a schematic view of an eye for a toy, in accordance with an embodiment.
[0007] FIG. 2 is a cross-section of an eye, in accordance with an embodiment.
[0008] FIG. 3 is a top plan view of the eye of FIG. 2.

DETAILED DESCRIPTION

[0009] Referring to FIG. 1, an embodiment of a toy 1 comprises a head 10 and an eye 100. The head 10 having a front face 12 and a cavity 14 in the front face 12. The cavity 14 having an opening 16. The eye 100 received in the cavity 14.
[0010] Referring to FIG. 2 and FIG. 3, an embodiment of the eye 100 comprises a socket 110, an eyeball 120, an eyelid 130, at least two electromagnetic units 140 and a permanent magnetic unit 150.
[0011] The socket 110 defines a spherical bay 111 and a hole 112. The eyeball 120, received in the spherical bay 111, has a pupil location 121 exposed at the opening 16. The pupil location 121 has a color light source 122, for example, a color light-emitting diode. A power line 113 provides power through the hole 112 to the color light source 122 of the eyeball 120. The pupil location 121 emits colored light from the color light source 122, increasing dynamic action of the eye 100.
[0012] The electromagnetic units 140 are disposed on different positions of an upper side of the socket 110, with variations thereof possible as required by different demands. The number of electromagnetic units 140 deployed is not limited, with eye 100 having two electromagnetic units 140, 140'. Accordingly, the electromagnetic units 140, 140' are disposed in a first position and a second position, respectively, both of which are spaced. The first position is on a near side of the pupil location 121, and the second position is disposed between the first position and the permanent magnetic unit 150, as shown in FIG. 2 and FIG. 3. The number of electromagnetic units 140 can be arranged within the head 10, adjacent to the eyeball, as shown in FIG. 1.
[0013] In this embodiment, the electromagnetic units 140, 140' are disposed near the socket 110 to increase a first magnetic attraction between the two electromagnetic units 140, 140' and the magnetic element 132. Magnetic poles of the electromagnetic units 140, 140' are perpendicular to an inner face of the socket 110 to face the magnetic element 132 and increase the first magnetic attraction. Therefore, two corresponding ends of the electromagnetic units 140, 140' and the magnetic element 132 carry opposite polarities.

[0014] The eyelid 130 is movably arranged between the socket 110 and the electromagnetic units 140, 140' and is slidable in response to the magnetic force applied thereto. The eyelid 130 having a first end 130A with an eyelash 131 attached thereto and an opposing second end 130B with a magnetic element 132 attached thereto. The magnetic element 132 can be a permanent magnet or an electromagnet, and when an electromagnet, is coupled with the power line 113. Here, the magnetic element 132 is a permanent magnet.
[0015] The permanent magnetic unit 150 is disposed on the upper side of the socket 110 and on a far side of the pupil location 121. In this embodiment, the first magnetic attraction of the electromagnetic units 140, 140' and the magnetic element 132 exceeds a second magnetic attraction of the electromagnetic units 140, 140' and the permanent magnetic unit 150.
[0016] As mentioned, in action, the eye 100 turns on one of the electromagnetic units 140, 140' and cooperates with the magnetic element 132 to attract the eyelid 130 in a direction corresponding to one of the electrified electromagnetic units 140, 140'. Movement of eye 100 is thus lifelike and varied. The permanent magnetic unit 150 cooperates with the magnetic element 132 to open the eyelid 130 of the eye 100, when the eye 100 is turned off.
[0017] When the electromagnetic unit 140 is turned on, the magnetic element 132 of the eyelid 130 is attracted to the electromagnetic unit 140' and narrows the eyelid 130 of the eye 100. When the electromagnetic unit 140 is turned on, the magnetic element 132 of the eyelid 130 is attracted to the electromagnetic unit 140 to close the eyelid 130 of the eye 100.
[0018] When the eye 100 quickly changes electrification of the electromagnetic units 140, 140', the eyelid 130 narrows, opens, and closes quickly to provide blinking action.
[0019] The eye 100 of the embodiment turns on the electromagnetic units 140, 140' by coupling with a power supply and cooperates with the magnetic element 132 to generate varied movement of the eyelid 130, providing lifelike and dynamic behavior of the toy such as blinking, narrowing, opening, and closing of the eye.
[0020] It is to be understood, however, that even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:
1. An eye comprising:
   a socket defining a spherical bay;
   an eyeball received in the spherical bay;
   an eyelid, one end of the eyelid comprises an eyelash, the other end of the eyelid comprising a magnetic element; and
   two electromagnetic units disposed on different positions of an upper side of the socket for generating and applying magnetic force to the magnetic element;
   wherein the eyelid is arranged between the socket and the electromagnetic units and is slidable in response to the magnetic force applied thereto.
2. The eye as claimed in claim 1, wherein the eyeball comprises a pupil location comprising a color light source.

3. The eye as claimed in claim 2, wherein the color light source is a color light-emitting diode.

4. The eye as claimed in claim 1, wherein the magnetic element is a permanent magnet.

5. The eye as claimed in claim 1, wherein the magnetic element is an electromagnet.

6. The eye as claimed in claim 2, further comprising a permanent magnetic unit disposed on the upper side of the socket and on a far side of the pupil location.

7. The eye as claimed in claim 2, wherein the electromagnetic elements are disposed in a first position and a second position, respectively, the first position on a near side of the pupil location, and the first position and the second position are on the upper side of the socket and spaced from each other.

8. The eye as claimed in claim 1, wherein magnetic poles of the electromagnetic units are perpendicular to an inner face of the socket.

9. A toy comprising:
   a head having a front face and a cavity in the front face, the
cavity having an opening;
an eyeball received in the cavity, the eyeball having a pupil
portion exposed at the opening;
a plurality of electromagnetic units arranged within the
head, adjacent to the eyeball;
an eyelid slidably arranged between the socket and the
electromagnetic units, the eyelid having a first end with
an eyelash attached thereto and an opposing second end
with a magnetic element attached thereto; the electromag-
netic units configured for generating and applying a
magnetic force to the magnetic element to drive the
eyelid to slide.

* * * * *