

May 9, 1933.

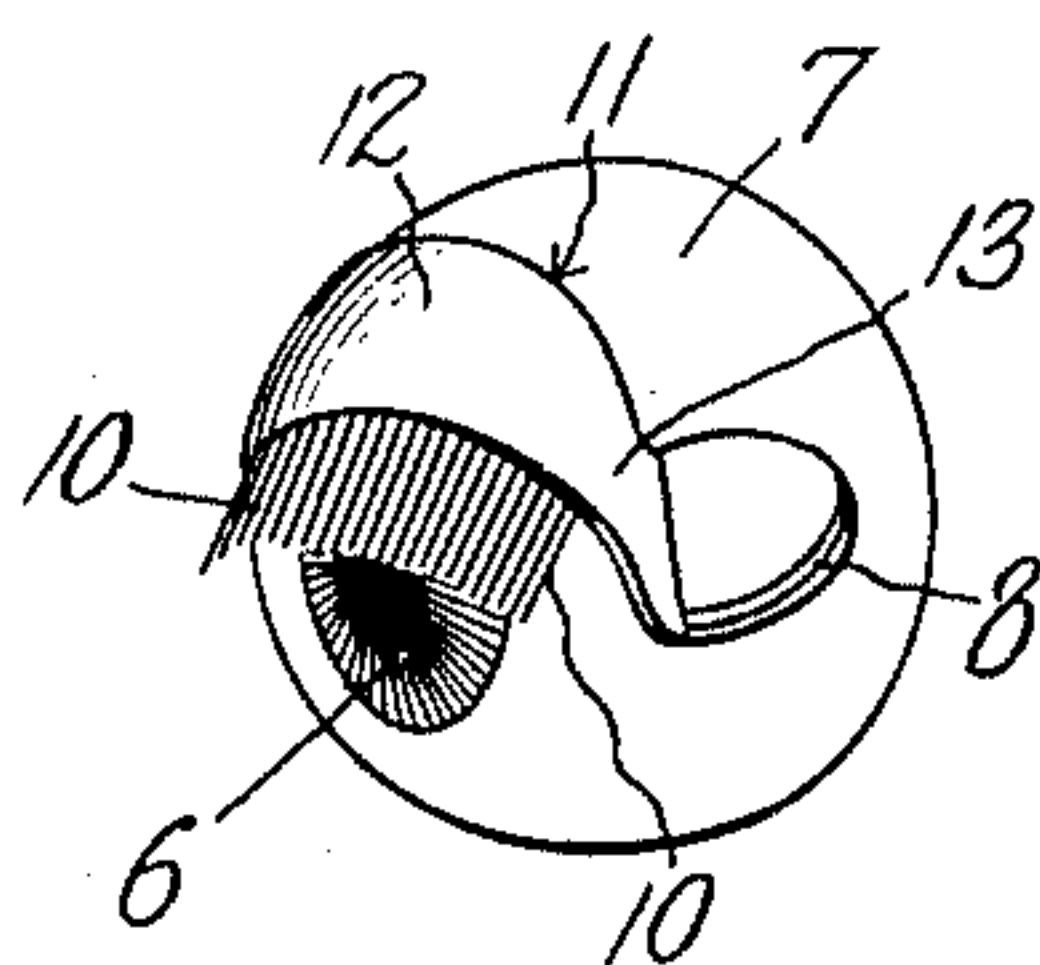
L. J. GRUBMAN

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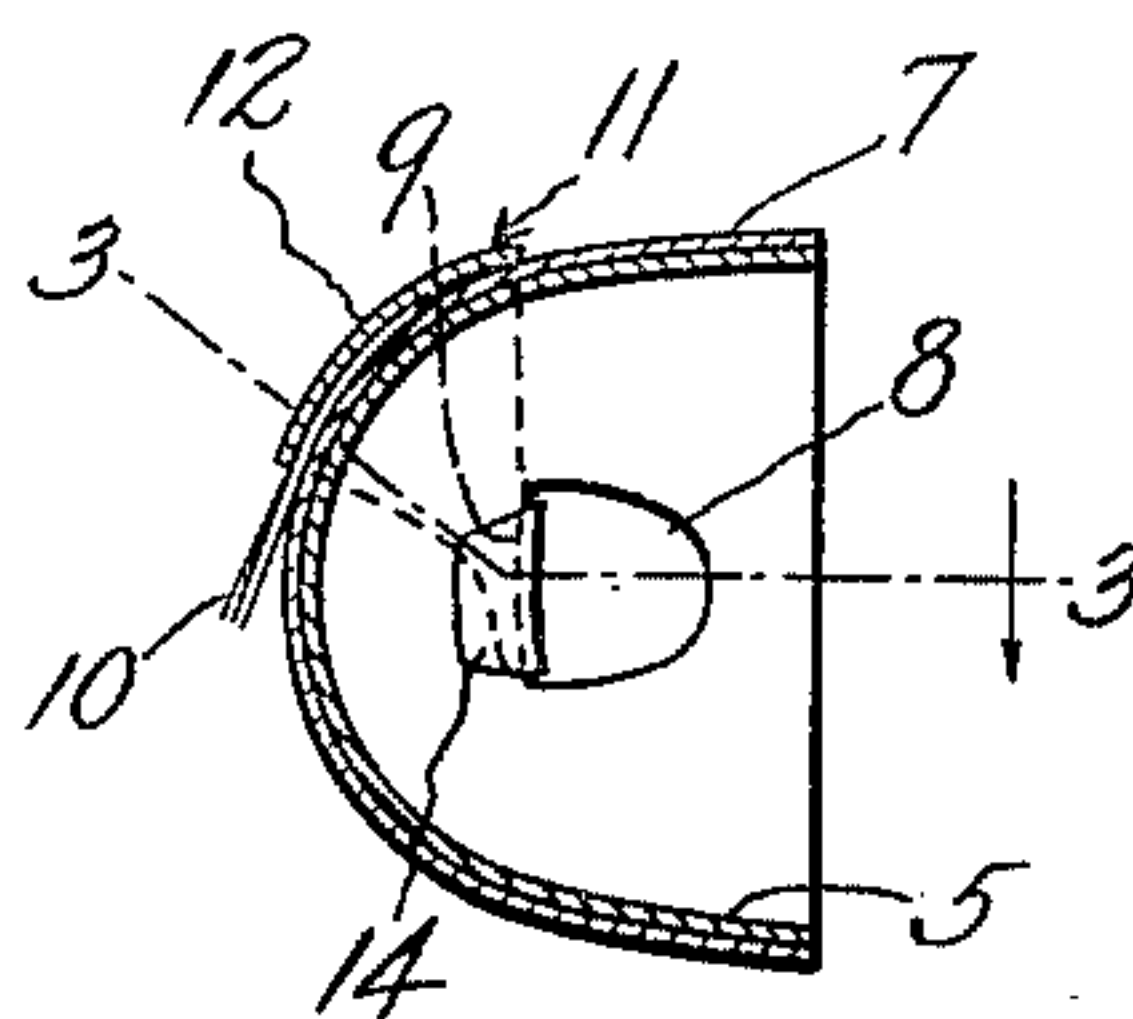
ARTIFICIAL EYE

Filed Oct. 17, 1931

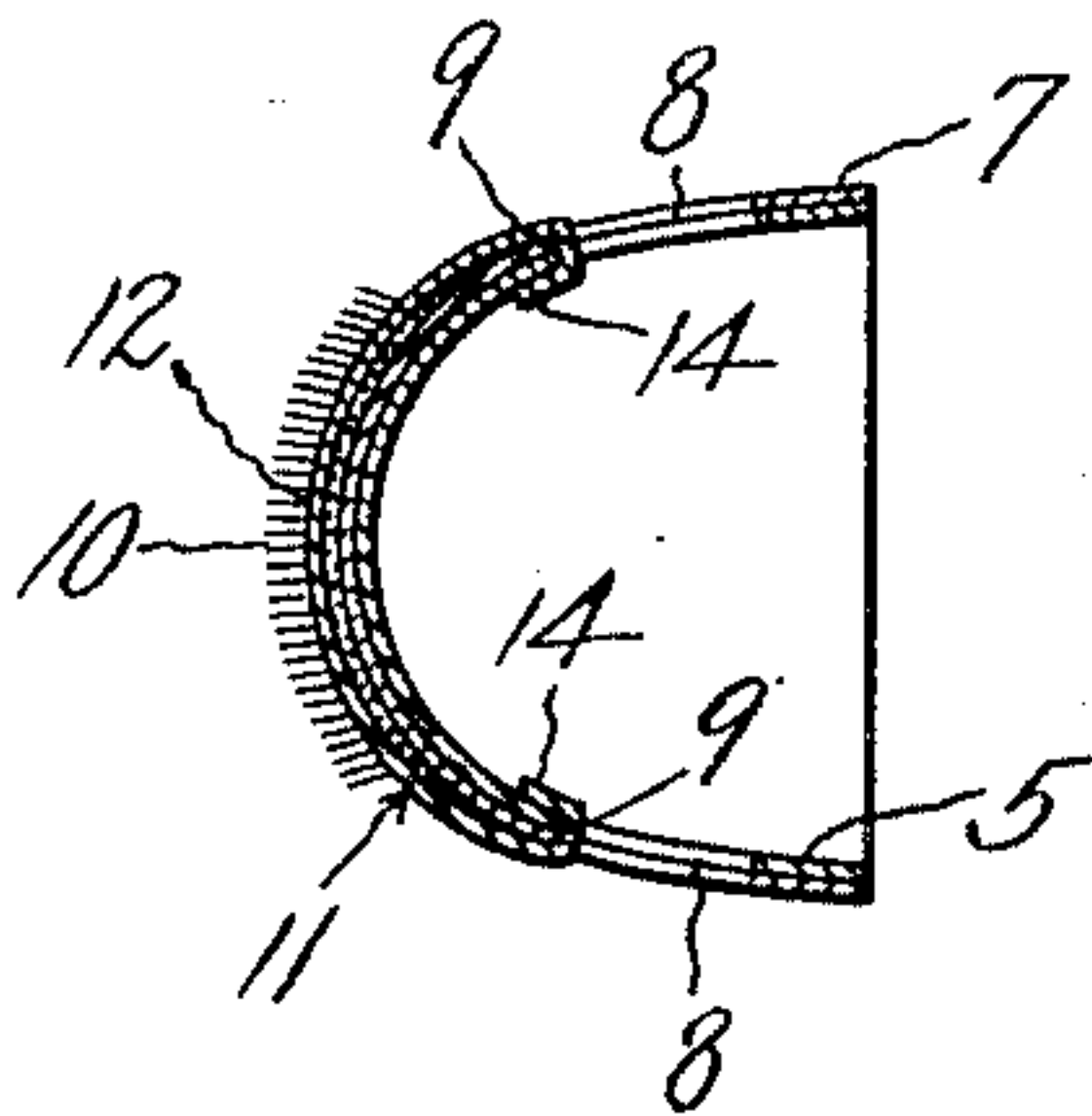
*Fig. 1*



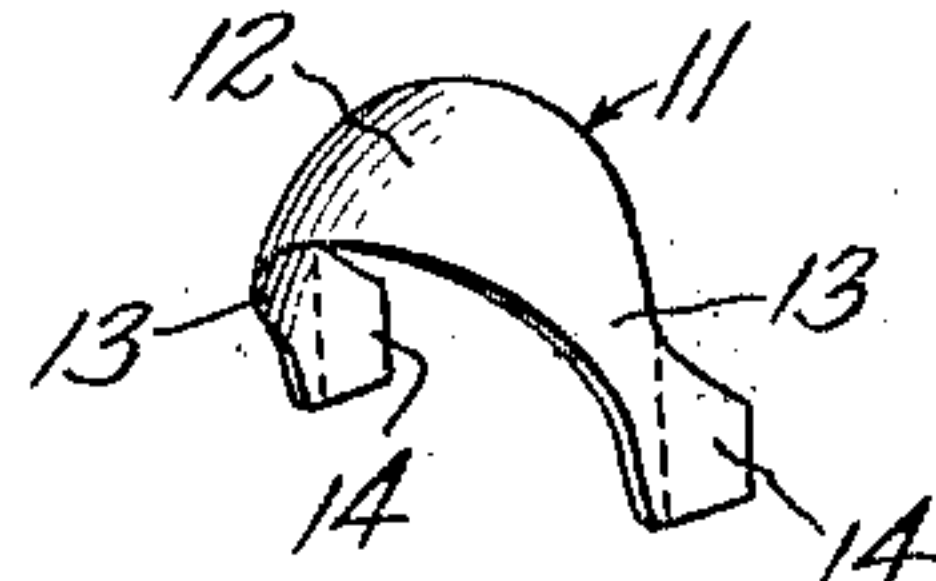
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



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## UNITED STATES PATENT OFFICE

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## ARTIFICIAL EYE

Application filed October 17, 1931. Serial No. 569,412.

This invention relates to artificial eyes, and has for its general object and purpose to provide an artificial eye having hair eye-lashes which are so constructed that the several parts of the eye, together with the lash strands may be rapidly assembled by machine, and the strands securely and permanently fixed in relation to the eye pupil.

It is another important object of the invention to provide an eye member in the form of a hollow shell having openings in its opposite sides, and an eyelid member formed and constructed to be superimposed upon a part of the eye shell and in clamping gripping engagement with the ends of eyelash strands, and said member having parts interlocking with the shell wall through the openings thereof to immovably secure said eyelid member in fixed relation to the shell.

It is a further general object of the invention to provide an artificial eye of the above character especially designed for use in connection with sleeping dolls, manikins, or other toy figures, and which will realistically simulate the human eye, the several parts of the device being of simple mechanical form so that they may be fabricated and assembled at small expense whereby the manufacturing costs of such artificial eyes are reduced to a minimum.

With the above and other objects in view, the invention consists in the improved artificial eye, and in the form, construction and relative arrangement of its several parts, as will be hereinafter more fully described, illustrated in the accompanying drawing, and subsequently incorporated in the subjoined claims.

In the drawing, wherein I have disclosed one simple and practical embodiment of the invention, and in which similar reference characters designate corresponding parts throughout the several views,—

Figure 1 is a perspective view of an arti-

ficial eye illustrating one practical embodiment of my present improvements;

Fig. 2 is a vertical sectional view;

Fig. 3 is a horizontal sectional view taken substantially on the line 3—3 of Fig. 2, and

Fig. 4 is a detail perspective view of the eyelid member.

Referring in detail to the drawing, the eye member as herein shown, preferably consists of an inner shell 5 of opaque material, such as sheet metal, celluloid or the like and is of general hemispherical form. Upon the front convex surface of this shell 5, the eye pupil indicated at 6 is painted or otherwise delineated. This may be done either before or after the opaque sheet material is die stamped or otherwise fashioned into the hemispherical form of the shell 5.

A relatively thin outer shell 7 of transparent celluloid or other material is superimposed upon the opaque inner shell 5, said outer shell entirely covering said inner shell. Preferably, in manufacture, the two sheets or flat discs of celluloid are first cemented together, and then formed into the required semi-spherical shape under the pressure of heated dies. However, it is apparent that if desired, the shell members may be separately formed and then secured together in nested relation by any suitable means.

The pupil 6 is of course, clearly visible at all times through the walls of the transparent outer shell 7 and is protected by said outer shell wall against the obliterative effects of atmospheric conditions, or possible injury from other causes.

The composite eye shell structure as above described is provided in the opposite sides thereof with the opening shown at 8 designed to receive the axis of an eye mounting, such as is commonly employed in the application and use of such artificial eyes in dolls and similar toys. Each of these openings at its front end is formed with an edge 9 extending substantially perpendicularly with re-



spect to a horizontal plane intersecting the eye pupil 6.

The eyelash consists of a multiplicity of individual hair strands 10 which are adapted to be positioned with one of their ends disposed upon the convex surface of the outer shell 7 of the eye member in appropriate relation to the pupil 6. These lash strands are then rigidly clamped and permanently secured to the surface of the shell 7 by the eyelid member 11. This lid member consists of a sheet metal strip having a relatively wide intermediate portion 12, and the tapering side portions 13, said strip being formed by means of suitable dies into the curved shape shown in Figs. 2 and 4 of the drawing so that the intermediate portion thereof extends on an arc substantially concentric with the outer surface of the eye shell 7. The tapering end portions 13 of the lid member are provided with lateral extensions 14.

The lid member 11, is superimposed upon the ends of the eyelash strands 10 and upon the surface of the outer eye shell 7 as seen in Fig. 2 of the drawing, and in such application of said lid member, the tapering side portions 12 are expanded outwardly from their normal conditions by contact with the eye shell 7, thus causing said end portions of the lid member to tightly grip the wall of the eye shell. The lateral extensions 14 of the lid member extend over the outer sides of the openings 8 in the eye member, and while pressure is maintained on the intermediate portion 12 of the lid member to hold the same in tight clamping engagement upon the lash strands and the eye shell 7, said extensions 14 are bent inwardly through the openings 8 and then forwardly around the front vertical edges 9 of said openings and upon the inner face of the shell member 5. In this operation of bending or clinching the terminal extensions 14 and interlocking the same with the eye member through the openings 8 thereof, the central part 12 of said lid member is drawn inwardly or downwardly and thereby caused to exert such a degree of clamping pressure upon the ends of the lash strands 10 as to insure against either their accidental or intentional detachment from the surface of the eye shell. Thus, the lash strands are permanently fixed with respect to the pupil 6, and may then be bent upwardly by suitable means to a desired angularly projecting position from the lower edge of the lid member 11. The clinched ends 14 of the lid member cooperating with the vertical edges 9 of the openings 8, precludes any possibility of a circumferential shifting movement of the lid 14 with respect to the surface of the eye member. It is of course, understood that the outer surface of the member 11 is painted in the required color shade to realistically represent the lid of the human eye.

From the foregoing description considered

in connection with the accompanying drawing, the construction of my new artificial eye as well as the manner of assembling the several parts thereof will be clearly and fully understood. It will be seen that by reason of the mechanical form and construction of the several parts, that the eyelashes and the eyelid member may be readily applied and secured to the eye member proper by machine and without the use of adhesives, while at the same time a permanently fixed relationship between the eyelash strands and the eye pupil is assured. Thus, my present invention enables such artificial eyes to be manufactured on a quantity production basis by means of unskilled labor, and with a resultant appreciable reduction in manufacturing costs. The use of such artificial eyes in sleeping dolls and other figures having the individual hair strand eyelashes applied and secured in attached relation to the eye member in the manner above explained, results in a very realistic simulation of the human eye.

I have herein referred to a particular construction of the eye member proper, but it will be understood that the essential features of my present disclosure are also capable of application to such artificial eye members of various other detail construction. Also the particular form of the openings 8, and of the eyelid member 11 may also be modified or varied as required or necessitated by the mechanical characteristics of the particular eye mounting or head structure in connection with which the device is to be employed. Accordingly, it is to be understood that in practice, I reserve the privilege of resorting to all such legitimate changes in the form, construction and relative arrangement of the several detail parts of the device as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. An artificial eye comprising a semi-spherical shell provided with an eye pupil, an eyelid member of curvilinear sector-shaped form gradually tapering in width in each direction from its central portion, and disposed in superimposed relation upon the convex surface of the shell above the eye pupil, eyelash strands interposed between said shell and the forward edge of the lid member, and an integrally formed, bendable, projection at each end of said eyelid member cooperating with an edge portion of the shell to hold said lid member in superimposed relation thereon and closely confine the lash strands therebetween.

2. As a new article of manufacture, an eyelid for artificial eyes comprising a curvilinear sector-shaped member of concavo-convex form in cross section adapted to be superimposed upon the convex surface of an eye member above the pupil thereof, said lid member having tapering end portions yield-



able with respect to the intermediate portion  
of said member and each terminating in a  
part projecting laterally from one edge of the  
end portion and adapted for coaxing engage-  
5 ment with an edge of the eye member to pre-  
vent relative movement between the eye  
member and lid member and retain the latter  
in closely superposed relation to the surface  
of the eye member.

10 In testimony that I claim the foregoing as  
my invention, I have signed my name hereto.  
LEO J. GRUBMAN.

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