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2,574,750

IMPLANT FOR ARTIFICIAL EYES

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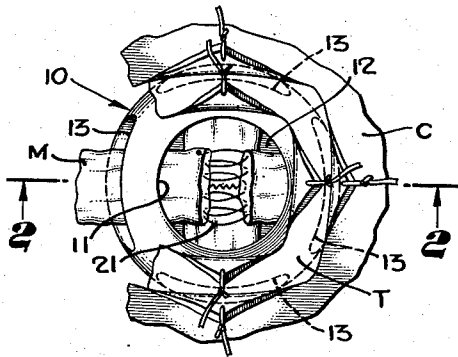


Fig. 1.

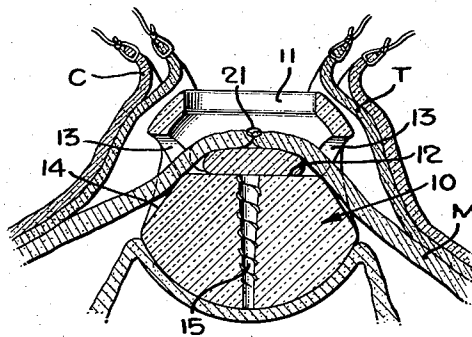


Fig. 2.

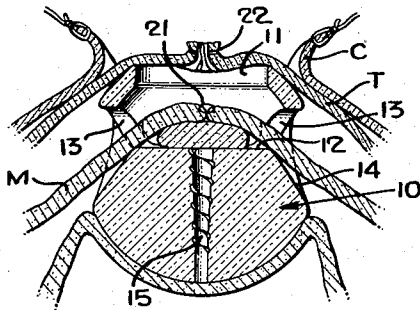


Fig. 3.

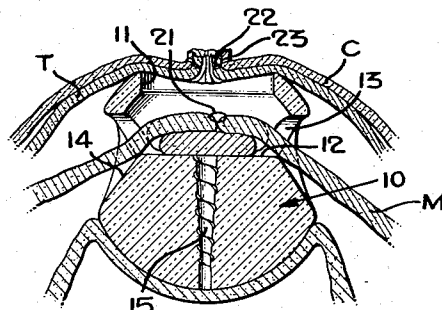


Fig. 4.

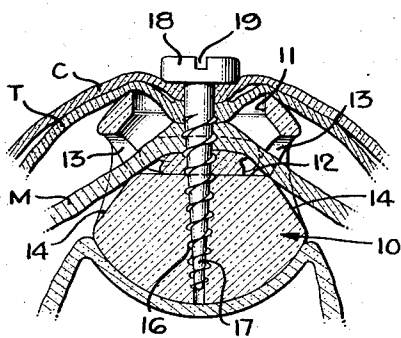


Fig. 5.

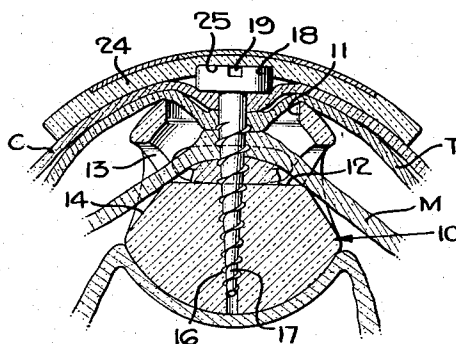


Fig. 6.

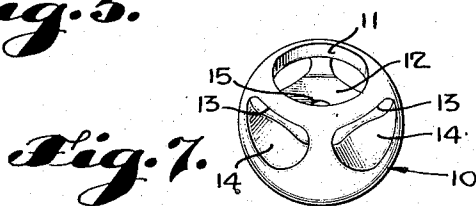


Fig. 7.

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IMPLANT FOR ARTIFICIAL EYES

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6 Claims. (Cl. 3—13)

1

This invention relates to improvements in implants for artificial eyes.

Heretofore it has been proposed to replace an enucleated eye with an implant to which the rectus muscles may be attached in order to cause the implant to move sympathetically with the good eye. See the article entitled "Plastic Eye Implant" by A. D. Ruedemann, appearing in the American Journal of Ophthalmology for August 1946, page 947, et seq. Therein is disclosed an eye implant wherein the rectus muscles are attached to tantalum paddles which, in turn, are attached to the sides of the implant enabling the implant to be rotated within the socket by the muscles in sympathy with movements of the good eye. In an article entitled "A Positive Contact Ball and Ring Implant For Use After Enucleation" by Norman L. Cutler, appearing in Archives of Ophthalmology for January 1947, at page 73, et seq., another implant is disclosed consisting generally of an approximately hemispherical body near the anterior end of which a ring is mounted by means of four spaced supports. The rectus muscles are drawn between the body and the ring and are secured in position thereon by reversely folding the ends of the muscles about the ring. Tenon's capsule and the conjunctiva are subsequently drawn inwardly over the muscle ends and are attached around the ring after which a stud is inserted into a seat therefor in the implant providing for the mounting on the implant of a prosthesis on which the eye is depicted. In the implant disclosed in the last mentioned article the forward face of the implant is left exposed by the conjunctiva and Tenon's capsule and, as observed in the article, if a muscle became exposed it was very apt to let go, allowing the implant to prolapse.

An object of the present invention is to provide an improved implant of the type disclosed in the Cutler article above referred to wherein the body of the implant is of generally spherical form having lateral openings formed therein which are in mutual communication with each other and through which the rectus muscles can be drawn and opposed muscles mutually connected. On the anterior face of the implant there is an opening in communication with the mentioned openings and the back of which is disposed rearwardly of the forward edges of the lateral opening. The implant has a seat formed therein coaxially with the last mentioned opening adapted to receive a stud or screw which projects forwardly of the implant so that its head may engage the prosthesis.

By means of the improved implant it is possible to secure a very firm connection between opposed

2

rectus muscles and to secure a connection between these muscles and the implant so that the muscles can properly actuate or move the implant. Furthermore, it is possible to close or substantially close Tenon's capsule and the conjunctiva over the implant, avoiding muscle exposure and reducing danger of infection.

Other objects of the invention are to provide an implant for artificial eyes which can be easily manufactured and which are so designed as to facilitate the operation involved in inserting the implant and the connection of the rectus muscles thereto.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Figure 1 is a partial view in front elevation of an eye socket illustrating the conjunctiva and Tenon's capsule as having been opened, the implant embodying the present invention as having been inserted, and the manner in which opposed rectus muscles are joined to form the initial step in connecting them to the implant;

Fig. 2 is a sectional view taken substantially upon the line 2—2 upon Fig. 1;

Figs. 3 and 4 are views similar to Fig. 2 but illustrating the manner in which Tenon's capsule and the conjunctiva may be closed over the implant;

Fig. 5 is a view similar to Fig. 2 but illustrating the manner in which the stud or screw may be applied;

Fig. 6 is a similar view illustrating the prosthesis as having been applied to the stud or screw; and

Fig. 7 is a perspective view of the implant.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, the implant embodying the present invention consists of a generally spherically-shaped body 10 which may be formed of a synthetic resin plastic such as a methyl methacrylate resin. Other materials may be employed for the implant which will not corrode and which are not antipathetic to tissues of the eye socket. In the forward or anterior side of this body there is formed a circular opening 11 which extends inwardly a sufficient distance so that its back 12 is arranged slightly forward of a transverse diameter of the body 10. Lateral openings 13 are formed in the forward sides of the body to communicate with the anterior opening 11. The forward edges of these openings are dis-

3

posed forwardly of the back 12 and their bottom edges are beveled rearwardly as indicated at 14. A seat 15 is formed in the body so as to be coaxial with the anterior opening 11. This seat is designed to receive a stud or screw preferably formed of a non-corrodable material and, as I prefer to employ for this purpose a tapered screw, this seat is illustrated as consisting of a bore on the walls of which screw threads are formed complementary to the screw threads 16 on the screw 17. The screw has a head 18 in which a kerf 19 may be formed.

In installing the implant in the socket the four principal rectus muscles have sutures attached thereto which are threaded through their respective lateral openings 13 in the implant and drawn forwardly through the anterior opening 11. Opposed muscles M can thus be drawn into their respective openings 13 and attached together, such as by the sutures 21. Sutures that will ultimately dissolve are preferably employed. When opposed rectus muscles are thus connected they are released to lie against the back 12 of the opening 11, one pair of muscles assuming a position overlying the juncture between the other pair of muscles. Tenon's capsule, indicated at T, may then have its edges drawn together by a purse string suture, indicated at 22. In a similar manner the conjunctiva, indicated at C, may be purse-stringed, as indicated at 23, see Fig. 4. Thus, as viewed in Fig. 4, the implant is completely enclosed by the conjunctiva and Tenon's capsule, reducing danger of infection and preventing muscle exposure. The attached muscles M, Tenon's capsule, and the conjunctiva are then allowed to heal and when the healing is completed the stud or screw 17 is forced through the conjunctiva, Tenon's capsule, the junctures between the muscles M and screwed into its seat 15 in the body 10. When thus seated the head 18 projects slightly forward of the foremost portion of the body. The prosthesis 24 on which the eye is depicted has a socket 25 formed on its posterior side designed to fit the head 18. The prosthesis is held against the head of the stud or screw 17 by the pressure of the upper and lower eyelids.

It will be appreciated from the above described construction by those skilled in the art that the improved implant is of very simple construction and may be easily manufactured. It is so designed as to enable the muscles to be easily brought together and firmly secured and when the stud or screw 17 is driven therethrough an adequate attachment between the muscles and the implant is established to enable the muscles to move the implant and the prosthesis sympathetically with the good eye. Muscle exposure is avoided and as the Tenon's capsule and the conjunctiva are both brought into covering relationship, danger of infection is avoided.

Various changes may be made in the details of construction without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. An implant for artificial eyes comprising a generally spherical body having in the anterior face thereof an anterior opening in back of which there is a bore for a stud for a prosthesis, there being lateral openings formed in the sides of said body communicating with the mentioned opening and with each other and through which

4

the rectus muscles may be extended and joined, and a stud adapted to be extended through the anterior opening and through the joined muscles to be seated in the bore to project through the opening in the anterior face and on which the prosthesis may be positioned.

2. An implant for artificial eyes comprising a generally spherical body having in the anterior face thereof an anterior opening in back of which there is a bore for a stud for a prosthesis, there being lateral openings formed in the sides of said body communicating with the mentioned opening and with each other and through which the rectus muscles may be extended and joined, the sides of the body being recessed rearwardly from said lateral openings and a stud adapted to be extended through the anterior opening and through the joined muscles to be sealed in the bore to project through the opening in the anterior face on which the prosthesis may be positioned.

3. An implant for artificial eyes comprising a generally spherical body having in the anterior face thereof an anterior opening in back of which there is a bore for a stud for a prosthesis, there being lateral openings formed in the sides of said body communicating with the mentioned opening and with each other forwardly of the back of the anterior opening and through which the rectus muscles may be extended and joined, and a stud adapted to be extended through the anterior opening and through the joined muscles to be seated in the bore to project through the anterior opening.

4. An implant for artificial eyes comprising a generally spherical body having an anterior opening formed therein in back of which there is a threaded bore for a stud, there being lateral openings formed in the sides of said body communicating therewith and with each other and through which the rectus muscles may be extended and joined.

5. An implant for artificial eyes comprising a generally spherical body having muscle receiving openings forwardly of the transverse diameter through the body and through which opposed rectus muscles may be joined, a bore in the back of the body into which a stud may be extended through the joined muscles, and an elongated narrow stud receivable in the bore through the joined muscles on which a prosthesis may be mounted.

6. An artificial eye comprising an implant of generally spherical shape having openings there-through through which opposed rectus muscles may be joined, an elongated narrow threaded stud adapted to be inserted through the joined muscles and into the back of the implant, said stud having a head and a prosthesis mounted upon said head.

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REFERENCES CITED

The following references are of record in the file of this patent:

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