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PROCESS OF CONSTRUCTING A LENS MOUNTING

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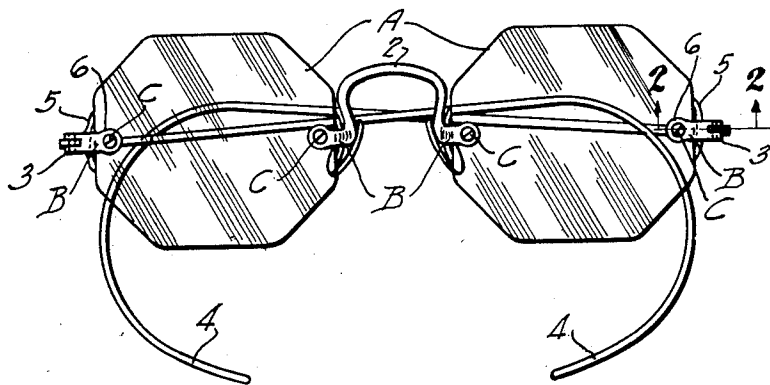


Fig. 1.

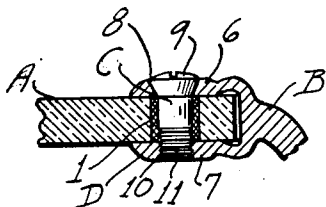


Fig. 2.

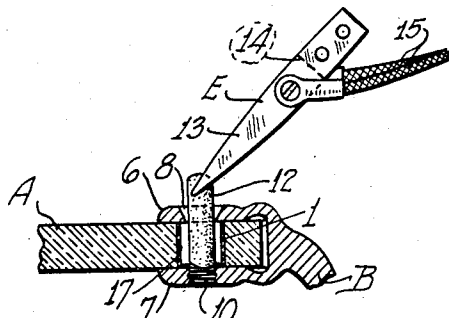


Fig. 3.

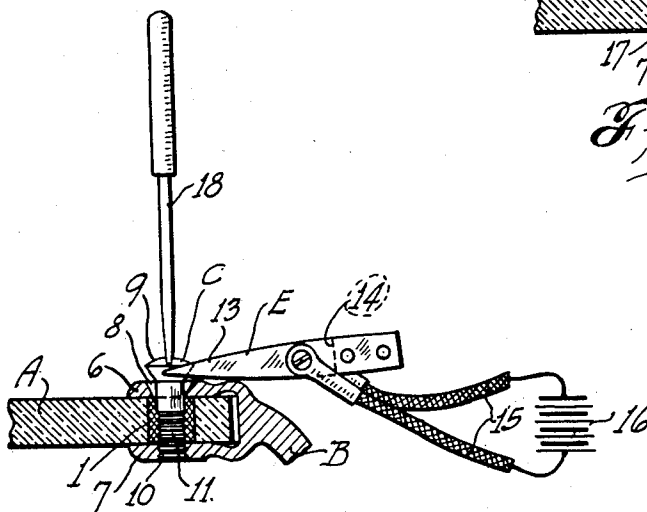


Fig. 4.

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PROCESS OF CONSTRUCTING A LENS MOUNTING

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12 Claims. (Cl. 88—47)

This invention relates generally to ophthalmic devices and has more particular reference to a certain new and useful process of constructing a lens-mounting.

5 My invention has for its prime objects the provision of a process for constructing a lens-mounting in which the mounting screw is permanently secured and fixed both in the mounting-strap and in the lens.

10 And with the above and other objects in view, my invention resides in the unique process and the steps thereof for constructing a lens-mounting, all as hereinafter described and pointed out in the claims.

15 In the accompanying drawing,—

Figure 1 is an elevational view of ophthalmic-spectacles embodying lens-mountings constructed in accordance with my invention;

20 Figure 2 is an enlarged fragmentary sectional view of a lens and an attached bifurcated strap, taken approximately along the line 2—2, Figure 1;

25 Figure 3 is a view similar to Figure 2, illustrating the step of inserting the fusible setting-forming plug through one of the strap-bifurcations into the lens-aperture with the aid of a suitable plug-heating appliance; and

30 Figure 4 is a like view, illustrating the step of inserting the fastening-screw in the mounting also with the aid of the heating-appliance for temporarily maintaining the plug in molten or fluid condition.

35 Referring now more in detail and by reference characters to the drawing, A designates a conventional form of ophthalmic-lens, and B, B, mounting-fixtures therefor, which fixtures are usually in the form of bifurcated straps, the lens A being suitably marginally drilled for providing an aperture 1 for reception of a screw or strap-fastening element C for connecting or securing the respective strap B to and on the lens A, as best seen in Figure 2.

40 In the particular lens-mounting shown in Figure 1, a pair of the lenses A is mounted for spectacle use with the opposing inner margins of the lenses A provided with straps B connected by a bridge-piece 2 and the respective outer margins of the lenses A provided also with straps B connected to end bars 3 pivotally supporting temples 4 in the usual manner. However, my invention may be readily employed with other forms of ophthalmic mountings, as will be understood by those skilled in the art.

45 In the customary manner, each of the straps B comprises a bifurcated clasp having preferably 55 lateral arms or lens-edge engaging portions 5 and

having also spaced lens-margin embracing outer and inner side plates or ears 6, 7, for engaging the opposite sides of the lens A, the ear 6 having an aperture 8 suitably chamfered for reception of the head 9 of the screw C, and the ear 7 having a threaded aperture 10 in registration with the aperture 8 for lens-engaging co-operation with the threaded end 11 of the screw C.

12 designates a fusible plug for the formation of a setting D, as it may descriptively be termed, the plug 12 being preferably of a metallic substance, as solder or the like, having the property or characteristic of fusing readily under a moderate degree of heat. According to my invention, fusing heat is applied to the plug 12 and the plug 12 manipulated, as will presently appear, by means preferably of an electrical appliance in the form of tweezers E comprising, in the present instance, a pair of suitable opposing current conducting flexible jaws or grasping arms 13 mounted on a suitable insulating block 14 and, respectively, by suitable conductors 15, connected to the opposite terminals of a source of preferably low potential energy, as a battery 16 or the like, as shown in Figure 4.

50 In the carrying out of or practicing my invention, I preferably apply a suitable liquid flux 17, as zinc-chloride or the like, to the underside of the lens A for, by capillary attraction or otherwise, coating the wall of the aperture 1 with a film of the flux for causing the material of the plug 12, after first being fused or melted, to adhere to and unite with the metallic surfaces provided by the screw C and the strap-ears or bifurcations 6, 7, as will presently more fully appear.

60 I then insert the flux-moistened lens A into the bight of the attachment or strap B with the apertures 8, 10, in approximate registration with the lens-aperture 1 and with the lens-edge engaging arms 5 firmly bearing on the edge of the lens A. It may be here stated that the lens-aperture 1 preferably, as shown, has a slightly larger diameter than that of the shank of the screw C for avoiding the necessity of exactitude in the alignment of the strap-apertures 8, 10, with the lens-aperture 1.

65 Then, with the tweezers E grasping an end of the plug 12, the plug 12 is quickly inserted through the outer-ear aperture 8 into the lens-aperture 1. As soon as the plug 12 is grasped by the tweezers E, current flows from the battery 16 through the tweezer-arms 13 and the plug 12, whereby the latter is heated and fused, the melted plug-material then dropping, as may be said, from the 70 75 80 85 90 95 100 105 110

tweezers E into the lens-aperture 1, at the same time commingling with the flux 17 suitably for the purpose intended.

A screw C being then grasped by the tweezers E, current is again caused to flow from the battery 16 through the tweezer-arms 13 and screw C for, in turn, heating the latter to suitable temperature for temporarily maintaining the plug-material in fused condition. So grasped, the screw C is quickly thrust endwise through the outer-ear-aperture 8 and into and through the fused plug material in the lens-aperture 1. The end 11 of the screw C is then, by means of a suitable screw-driver or the like 18, threaded into the inner-ear-aperture 10 for firmly drawing, though not necessarily with a clamping action, the opposing strap-ears 6, 7, toward and upon the lens A, as best seen in Figure 4, the tweezers E meanwhile being withdrawn, as will be understood.

The heated screw C, on immersion into the fused plug material, becomes "tinned", as may be said, with a film thereof, whereby, on the end 11 of the screw C being threaded into the threaded aperture of the ear 7, the threaded portion 11 of the screw C becomes soldered or united to the threaded inner-ear 7, any excess of the fused plug material escaping through the inner-ear-aperture 10 as the screw C is threaded thereinto.

At the same time, the screw C, upon its entry into the lens-aperture 1, compresses and molds in situ, as may be said, the contained plug-material, which thereby snugly and tightly fills the lens-aperture 1 around the shank of the screw C, as shown in Figure 2.

The screw C being so seated, the plug material is permitted to cool and set and, on hardening or solidifying, thus forms, as may be said, a molded setting D united both with the shank of the screw C and with the strap-ears 6, 7. Thus also the screw C is most firmly, rigidly, and immovably embedded in the lens A and securely fixed and adhesively soldered to and in the ears 6, 7, and the strap B, in turn, rigidly and permanently fixed and anchored to the lens A.

However, for repair purposes, the setting D may readily be remelted by suitable use of properly applied heat, as by the tweezers E, whereby the screw C may be withdrawn from the strap B and the latter readily demounted from the lens A.

It will be evident that, in constructing the lens-mounting, it is unnecessary to clamp the strap B tightly on the lens A, inasmuch as the molded setting D is bedded at or abuts its opposite ends on the strap B while the screw C is in heated or heat-expanded condition, whereby the latter, on cooling, contracts sufficiently for tensing the screw C for effectively binding the strap B on the setting D embedded in the lens. Thus the danger of breaking the brittle lens glass by too strongly gripping the strap B thereon is in my mounting entirely avoided.

The rigid mounting accomplished and afforded by my invention so securely binds the lens A and the strap B together as to wholly inhibit disalignment of the lenses in their mountings, whereby not only are the spectacles highly efficient and comfortable in wear, but also lens loosening in their respective mountings is wholly avoided.

It will be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of my new lens-mounting and in the method of constructing the same may be made and substituted for those parts and steps hereinbefore described without

departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is,—

1. Those steps in the process of mounting an apertured lens in an apertured bifurcated strap, which consist in marginally inserting the lens in the bight of the strap with the lens-aperture in registration with the strap-apertures, disposing a setting material in fluid condition in the lens-aperture, then inserting a strap-fastener in said registering apertures for embedding the fastener in the setting material and at the same time heating the fastener for expanding the same, then tightening the fastener while in heat-expanded state, and then permitting the fastener to cool for drawing the strap firmly on the setting material in the lens-aperture.

2. The process of mounting an apertured lens, which consists in marginally inserting the lens in the bight of an apertured bifurcated mounting-strap with the lens-aperture in registration with the apertures of the strap, disposing and melting a fusible setting material in the lens-aperture, heating and disposing a fastener in said registering apertures and in the setting material, then tightening the heated fastener in the strap while the setting material is in fluid condition, and then permitting the setting material to harden and solidify.

3. The process of mounting an apertured lens, which consists in flux-moistening the wall of the lens-aperture, marginally inserting the flux-moistened lens in the bight of an apertured bifurcated strap with the apertures thereof in registration with the lens-aperture, disposing and melting a fusible setting material in the lens-aperture, heating and disposing a fastener in the registering apertures and fluid material, then tightening the fastener in the strap while the setting material is in fluid condition, and then permitting the setting to harden and solidify.

4. The process of mounting an apertured lens, which consists in flux-moistening the wall of the lens-aperture, marginally inserting the flux-moistened lens in the bight of an apertured bifurcated strap with the apertures thereof in registration with the lens-aperture, inserting a plug of fusible material through one of the strap-apertures and melting the plug for disposing the fused material in the lens-aperture, heating and disposing a fastener in the registering apertures and fluid material, then tightening the fastener in the strap while said material is in fluid condition, and then permitting said material to set.

5. The process of mounting an apertured lens, which consists in flux-moistening the wall of the lens-aperture, marginally inserting the flux-moistened lens in the bight of an apertured bifurcated strap with the apertures thereof in registration with the lens-aperture, gripping a plug of fusible material with a heating-appliance for melting the plug and disposing the fluid material through one of the strap-apertures into the lens-aperture, heating and disposing a fastener in the registering apertures and fluid material, then tightening the fastener in the strap while the setting material is in fluid condition, and then permitting the setting material to set.

6. The process of mounting an apertured lens, which consists in flux-moistening the wall of the lens-aperture, marginally inserting the flux-moistened lens in the bight of an apertured bifurcated strap with the apertures thereof in registration with the lens-aperture, gripping a plug of

fusible material with a heating-appliance for melting the plug and disposing the melted material through one of the strap-apertures into the lens-aperture, then gripping a fastener with the heating-appliance for, in turn, heating the fastener and disposing the heated fastener in the registering apertures and through the melted material, then removing the appliance and tightening the fastener in the strap while said material is in fluid condition, and then permitting the setting material to set.

7. Those steps in the process of mounting an apertured bifurcated lens in an apertured strap which consist in marginally inserting the lens in the bight of the strap, then disposing a fusible setting-material through one of the strap-apertures and fusing the same in the lens-aperture, then disposing a heated fastener through the strap and lens apertures and into the fused material for maintaining the setting material in melted condition for fastener-displacement thereof in the lens aperture, and then permitting the fastener to cool and the setting material to set for embedding the fastener in the lens aperture and simultaneously uniting the fastener and the strap.

8. Those steps in the process of mounting an apertured lens in an apertured bifurcated strap, which consist in marginally inserting the lens in the bight of the strap with the lens-aperture in registration with the strap-apertures, disposing a plug of fusible setting material in solid form in the registering strap and lens apertures and then fusing the setting material, then while said material is in fluid condition endwise disposing a fastening-member through the registering strap and lens apertures and in the fluid material for engagement with the legs of the strap, and then permitting the material to resolidify in the lens-aperture and about the fastening-member for uniting the lens, strap, and fastening-member.

9. Those steps in the process of mounting an apertured lens in an apertured bifurcated strap, which consist in marginally inserting the lens in the bight of the strap with the lens-aperture in registration with the strap-apertures, disposing a plug of fusible metallic setting-medium in solid form in the registering strap and lens apertures, and then fusing said medium, then while said medium is in fluid condition, endwise disposing a strap-fastener through said registering apertures and in the fluid medium for engagement with the legs of the strap, and then permitting the setting-medium to resolidify in the lens-aper-

ture and about the fastener for uniting the lens, fastener, and strap.

10. Those steps in the process of mounting an apertured lens in an apertured bifurcated strap, which consist in marginally inserting the lens in the bight of the strap with the lens-aperture in registration with the strap-apertures, disposing a solid plug of solder in the registering strap and lens apertures and then fusing the solder, then while the solder is in fused condition endwise disposing a fastener through the registering-apertures and in the fused solder for engagement with the legs of the strap, and then permitting the fused solder to resolidify in the lens-aperture and about the fastener for uniting the fastener, strap, and lens.

11. Those steps in the process of mounting an apertured lens in a bifurcated strap having registering first and second apertures, the second aperture being threaded which consists in marginally inserting the lens in the bight of the strap with the lens-aperture in registration with the strap-apertures, disposing a solid plug of solder in the registering strap and lens apertures and then fusing the solder, then while the solder is in fused condition endwise disposing a screw fastener through the first strap-aperture and into and through the lens-aperture and the contained fused solder, then while the solder is in fused condition threadedly engaging the fastener with the second strap-aperture and drawing the strap-legs upon the opposite faces of the interposed lens, and then permitting the fused solder to resolidify in the lens-aperture and about the fastener for uniting the fastener, strap, and lens.

12. Those steps in the process of mounting an apertured lens in a bifurcated strap having registering first and second apertures, the second aperture being threaded, which consist in marginally inserting the lens in the bight of the strap with the lens-aperture in registration with the strap-apertures, disposing a solid plug of solder in the registering strap and lens apertures and then fusing the solder, then while the solder is in fused condition endwise disposing a heated screw fastener in and through the first strap-aperture, the lens-aperture, and the fused solder, then while the solder is in fused condition threading the fastener into the second strap-aperture and drawing the strap-legs upon the opposite faces of the interposed lens, and then permitting the fastener to cool and the solder to resolidify in the lens-aperture and about the fastener for uniting the fastener, strap, and lens.

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