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C. FISCHER

2,373,388

SEAL FOR SPACED GOGGLE LENSES

Filed Jan. 8, 1942

Fig. 1.

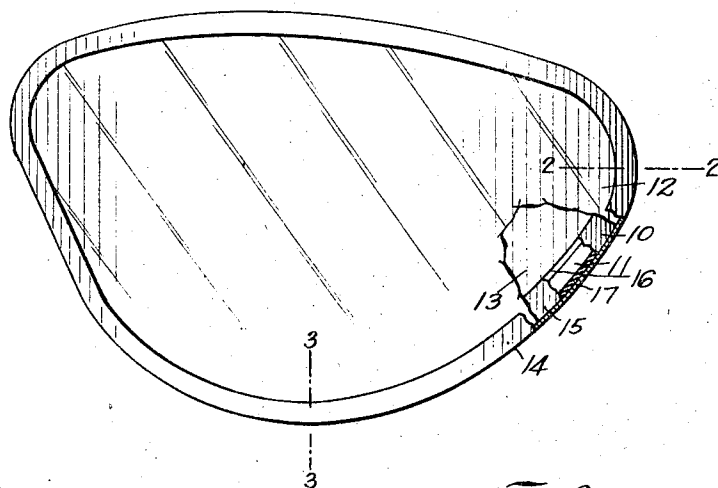


Fig. 2.

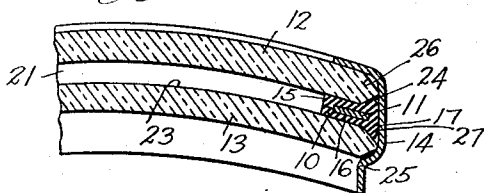


Fig. 3.

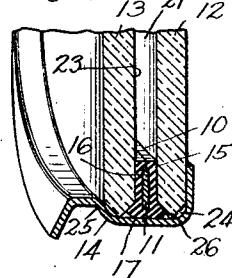


Fig. 4.

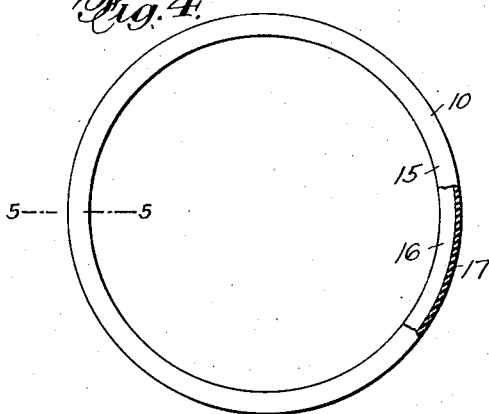


Fig. 6.

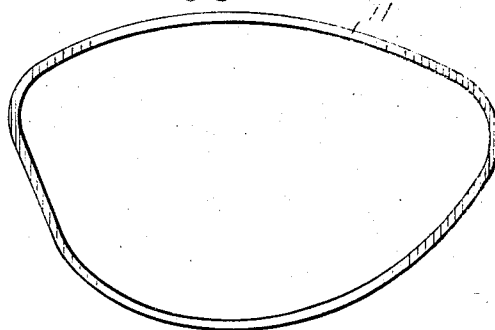
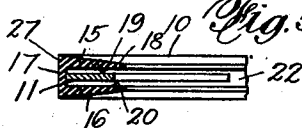


Fig. 5.



INVENTOR
Charles Fischer
BY Harry Jackson
ATTORNEY

UNITED STATES PATENT OFFICE

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SEAL FOR SPACED GOGGLE LENSES

Charles Fischer, New York, N. Y.

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11 Claims, (Cl. 2-14)

This invention relates to the double lenses of goggles such as aviators' and the like goggles, and particularly relates to the means for sealing the space between the lenses against the access of extraneous air or vapors.

The present invention is an improvement over my prior Patent No. 2,130,127, dated September 13, 1938, for Goggles, reference being hereby made to said patent.

My invention contemplates the provision of an effective sealing member composed of a prefabricated ring of flexible resilient material substantially U-shaped in cross-section and a separately prefabricated member comparatively wide and thin and preferably of non-resilient metal inserted into the ring between the flanges thereof to shape the resilient ring and thereby to permit the quick and easy assembly of the lenses with the thus assembled sealing member, and the easy insertion of the assembled lenses and sealing member into the goggle frame.

The various objects of the invention will be clear from the description which follows and from the drawing, in which,

Fig. 1 is a front view of the lens assembly, partially broken away to show the component parts of the sealing member.

Fig. 2 is a fragmentary vertical section of the same taken on the line 2-2 of Fig. 1.

Fig. 3 is a similar vertical section taken on the line 3-3 of Fig. 1.

Fig. 4 is a front view of the flexible resilient ring as it appears in its prefabricated form and before the shaped metallic member has been inserted thereinto.

Fig. 5 is a horizontal section of the same taken on the line 5-5 of Fig. 4 showing also the metallic member and the position assumed thereby when assembled with the resilient ring.

Fig. 6 is a front view of the preshaped metallic member.

In the practical embodiment of my invention shown by way of example, the sealing member comprises the flexible resilient ring 10 and the metallic member 11 and is arranged between the double spaced lenses 12 and 13 in the frame 14 of a pair of goggles similar to and in the general manner shown in my above-identified prior patent. The ring is distorted longitudinally and transversely by the metal member when they are assembled, and is also distorted laterally when assembled with the lenses in a manner later to be described in detail.

Preferably, the ring 10 is made of rubber and is prefabricated to assume a generally circular

form as shown in Fig. 4. In cross-section, the ring is U-shaped having a pair of spaced legs or flanges 15, 16 joined integrally by the web 17. The flanges are preferably, though not necessarily, somewhat reduced in thickness at their free edges 18 so that their outer walls may taper slightly while their inner walls 19, 20 are preferably parallel in the original or undistorted form of the ring. Consequently, the overall thickness of the ring at the web is greater than the overall thickness of the ring at the normally free edges of the flanges, thereby providing excess material at the web for distribution under compression in the proper manner to form an adequate seal as will appear from Figs. 2 and 3. Said ring being flexible and resilient may readily be distorted into the same shape as that of the lenses 12 and 13 which are usually of the cylindrical type and which are also shaped in the general form of an oval.

The member 11, as has been hereinbefore indicated, is preferably made of sheet metal, the material of the member being wide as compared with its thickness. Said member is made in the same general oval outline as that of the lenses. In its prefabricated form, the member 11 may be curved laterally out of its normal plane and into partly cylindrical form corresponding to the lens surfaces or it may be left in its original flat state, being sufficiently thin to be bent into the proper form even after it has been assembled with the ring 10. The final shaping may be left to the time when the thus assembled sealing member is arranged in the space 21 between the lenses and compressed by the lenses which perform the shaping of the sealing member to conform to the cylindrical shape of the lenses.

The diameter of the preformed ring 10 in its original circular form is less than the longest diameter of the oval shaped member 11. It will now be understood that when the metallic member 11 is inserted into the space 22 between the flanges 15 and 16 of the ring 10, said ring is distorted into the same generally oval shape as that of the member 11 and is stretched around the member 11 and is frictionally self-held thereon in its stretched condition, without the necessity for using adhesive or any other holding or securing means whatever. It will also be understood that the metallic member may quickly and easily be inserted between the flanges of the rubber ring 10 and into the space 22 to form a complete assembly therewith in a much easier manner and with much less expenditure of time and labor than when said member is made in the form of

a core surrounded by rubber, as is disclosed in my said prior patent. It will further be seen that the rubber ring 10 may be prefabricated in its simple circular form with the proper space 22 therein, comparatively inexpensively, and that when assembled with the forming member 11, the ring is easily and quickly reinforced to shape it into its desired final shape, the sealing assembly being stiffened against flapping about permitting its quick arrangement in its precise place between the lenses in a single easy operation. The assembled sealing member being reinforced and self-maintained in its proper shape does not lose its shape when handled or lifted and for this reason permits economical assembly with the lenses.

To arrange the sealing member in place, it is merely laid on the outer surface 23 of the inner lens 13, occupying the peripheral portion of said outer surface and flush with the edges thereof, whereafter the lens 12 is laid on the sealing member. The assembled lenses with the sealing member therebetween is then handled as a unit and inserted into the groove 24 provided therefor in the frame 14. To do this, the lenses are squeezed together against the yieldable sealing member. The assembled lenses easily snap past the edge 25 of the frame and into the groove provided, thereby to hold the assembly in place.

It will be noted that on the compression of the sealing member in its operative position in the frame, the free edge portions of the flanges 15 and 16 projecting beyond the metallic member 11 are pressed together into the position shown in Figs. 2 and 3, since said walls are of greater width than that of the member 11. It will further be noted that owing to the customary bevelling of the edges 26 of the lenses, the space 21 at the peripheries of the lenses is enlarged as compared with the remainder of said space. However, since the thickness of the ring 10 measured across the outermost part of the web thereof is greater than that of the space 21, the web 17 is nevertheless compressed to a substantial extent and forcibly pressed against the bevelled edges 26, thereby forming a perfect seal therewith regardless of the irregularities which may exist at said edges. While the outer surface 27 of the web 17 tends to assume a convex position under compression of the web, the wall of the frame limits the outward bulging of said web and aids in causing it to spread laterally. The sealing member therefore not only seals the space at the peripheral adjacent surfaces of the lenses 12 and 13, but if the sealing member is of sufficient diameter, it is forced against the wall of the frame groove and also seals the space between the frame 14 and the bevelled edges 26 of said lenses.

From the above, it will be seen that I have provided a simple sealing member consisting of a prefabricated rubber ring provided with a space for the reception of a thin metallic reinforcing member of the desired outline to be given the ring, which member distorts the ring into its proper shape and permits the easy handling thereof by stiffening and reducing the flexibility of the assembly, whereby the assembly may be easily positioned between the lenses. It will also be seen that upon such movement of the lenses toward each other, which is usual and customary in inserting the rings into the frame of the goggles, the ring is nevertheless compressed at its inner part and forced at its outer part against the frame and against the bevelled edges of the lenses

sufficiently to take up any irregularities in the formation either of the frame or of the lenses and thereby provides an efficient sealing member readily manipulated with the lenses as a unitary device when the parts are assembled into the goggle frames.

Any variation or modification of the invention described above which does not depart from the spirit of the invention is intended to be included within the scope of the appended claims.

I claim:

1. A sealing member adapted to be arranged between a pair of spaced goggle lenses to seal the space therebetween, said member comprising a prefabricated rubber ring of U-shaped cross-section having a pair of substantially parallel spaced flanges and a web integrally joining the flanges, and an annular relatively thin sheet metallic member, the width of the metallic member being a plurality of times greater than the thickness thereof, the shapes of the inner and outer edges of the metallic member being different from the normal undistorted shape of the ring, said metallic member being arranged in the space between the flanges of the rubber ring and in frictional contact with the web and distorting said ring to conform the shape of the ring to the shape of the metallic member.

2. A sealing member adapted to be arranged in contact with the peripheral portions of the adjacent faces of a pair of spaced goggle lenses, said sealing member comprising a normally circular rubber ring of U-shaped cross-section, and a comparatively thin but wide and laterally flexible and imperforate annular and non-circular metallic member of less width of material than that of the ring, the unstretched circumferential length of the ring being less than the corresponding circumferential length of the metallic member, said ring being stretched over the metallic member to increase its circumferential length and concealing said metallic member, and said metallic member reinforcing and stiffening the ring.

3. A normally circular sealing ring member of flexible resilient material and of U-shaped cross-section having a pair of spaced flanges and a web integrally joining the flanges, and an annular metallic member arranged frictionally between the flanges and with the outer edge thereof adjacent the web, said metallic member having a greater circumferential length than that of the inner edge of the web and stretching and distorting the ring member and thereby holding the ring member thereon.

4. A normally circular ring of flexible resilient material and of U-shaped cross-section having a pair of spaced flanges and a web integrally joining the flanges, and an annular non-circular metallic member arranged between the flanges and with the outer edge thereof adjacent the web, the overall length of said member being greater than the normal inner diameter of the web of the ring, and the width of the material of the metallic member measured between the inner and outer peripheral edges thereof being less than the width of the flanges, whereby the free inner edge portions of said flanges extend past the metallic member in the assembled positions of said ring and metallic member.

5. In a sealing member, a normally circular rubber ring of U-shaped cross-section having normally spaced flanges, and a non-circular metallic reinforcing member having a length greater than the outer diameter of the ring, said mem-

ber being arranged frictionally and removably in the space between the flanges and distorting the ring into a shape other than circular and maintaining the ring in its distorted shape.

6. In a sealing member, a rubber ring of U-shaped cross-section having a pair of spaced flanges integrally joined by a web, and an annular metallic member of approximately oval shape having its length greater than the outer diameter of the ring, said metallic member being inserted frictionally within the ring between the flanges and against the web and thereby distorting the ring from its normal shape to approximately the oval shape of the member, said metallic member stretching the ring to hold the ring assembled with the metallic member solely by friction and for manipulation thereof as a unit.

7. In goggles having a grooved frame and a pair of spaced lenses of approximately oval shape, a sealing member for the edge portion of the space between the lenses, said sealing member comprising a metallic annular member of approximately oval shape, a ring of normally circular shape and of U-shaped cross-section stretched over the metallic member and in contact with the peripheral edge portions of the adjacent faces of the lenses, the outer portion of said ring being in pressed engagement with the edges of the lenses.

8. In goggles, the combination of a pair of spaced lenses and a grooved frame for the reception of the lenses, a sealing member comprising a compressible rubber ring having a pair of spaced flanges, and an annular metallic member of flexible sheet material of less width than that of the flanges, and of less thickness than that of the flanges, said metallic member being loosely inserted between the flanges and against the web, said flanges being compressed by the lenses against the metallic member when the lenses with the sealing member therebetween are inserted in the groove of the frame, the remainder of the ring being spread against the edges of the lenses and against the frame to seal the space between the lenses.

9. In goggles, a frame provided with a lens-receiving groove, a pair of lenses arranged in laterally spaced relation within the groove, each of the lenses having bevelled edges, and a com-

pressible sealing member arranged between the lenses to seal the space therebetween, said sealing member comprising a rubber ring having a pair of normally spaced flanges when the ring is free of compression, and a preformed annular metallic member of substantially the same shape as that of the lenses, the material of said metallic member being of less width than that of the flanges and being arranged frictionally between the flanges, said flanges being compressed on the insertion of the lenses and sealing member in the groove, and the remainder of the ring engaging the bevelled surface of the lenses and the adjacent surface of the frame groove.

10. The combination with a goggle frame having an annular lens receiving groove therein, of a pair of laterally spaced lenses having bevelled edges fitted into the groove, an elastic sealing member between the peripheral portions of the lenses, said member having a pair of normally spaced flanges each having a free edge and a web integrally joining the other edges of the flanges, the web being spread against the bevelled edges of the lenses when the lenses and the member are assembled in the groove, and a thin flexible annular metallic member removably inserted between the flanges, the normally free edge portions of the flanges extending beyond the metallic member.

11. The combination with a goggle frame having an internal lens receiving groove therein, of a pair of laterally spaced lenses of the cylindrical type fitted into the groove, bevelled edges on the lenses, a rubber sealing member between the peripheral portions of the lenses, said member having an outer web and a pair of normally spaced flanges provided with normally free edge portions, the web being spread against the bevelled edges of the lenses when the lenses and the member are assembled in the groove, and a second normally flat laterally distortable member of annular form arranged between the flanges and against the web and stretching the rubber member and thereby holding the rubber member thereon, the second member and the rubber member being bent as a unit by said lenses out of the normal planes of said members.

CHARLES FISCHER.