Oct. 15, 1946. W. J. JOYCE 2,409,286

EYE PROTECTIVE MEANS

Filed Sept. 7, 1943 2 Sheets-Sheet 1

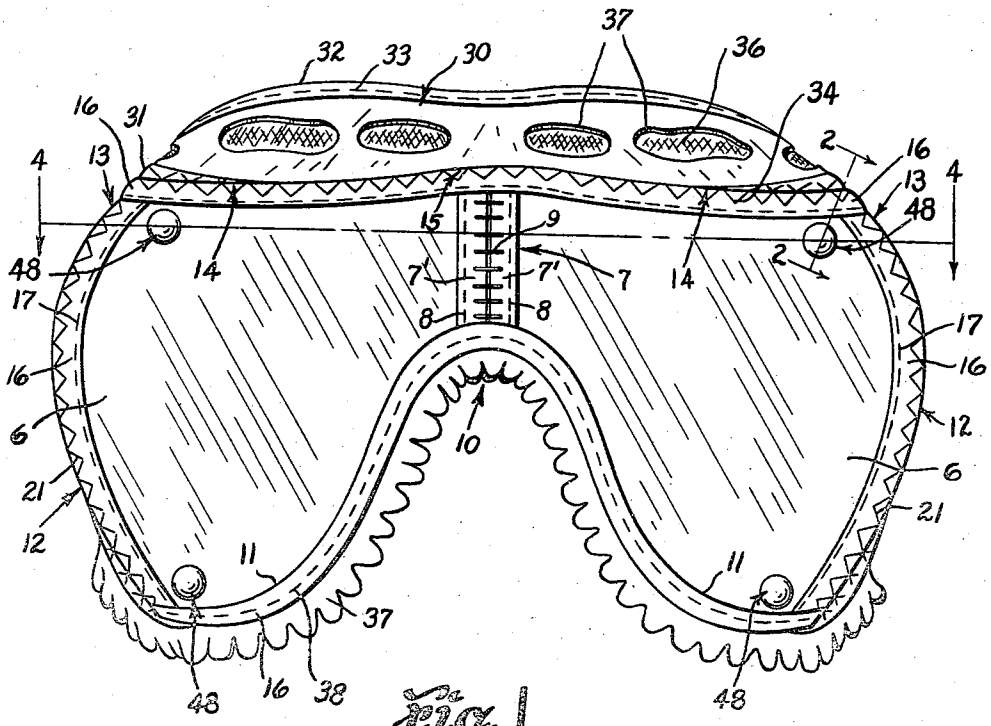


Fig. 1

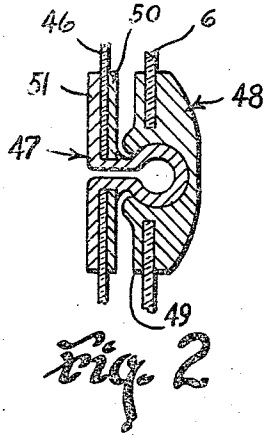


Fig. 2

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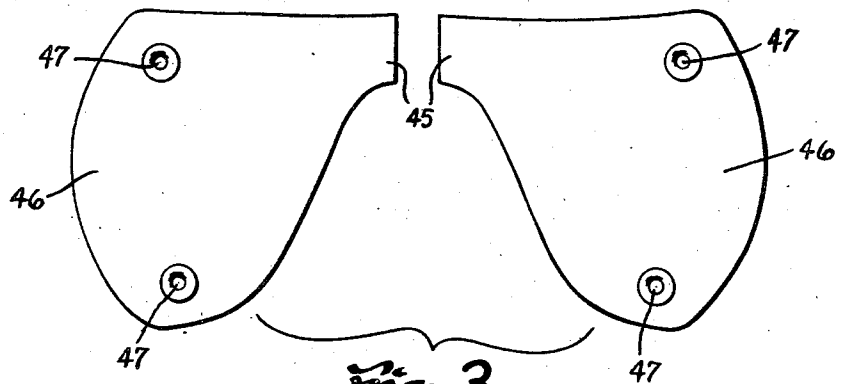


Fig. 3

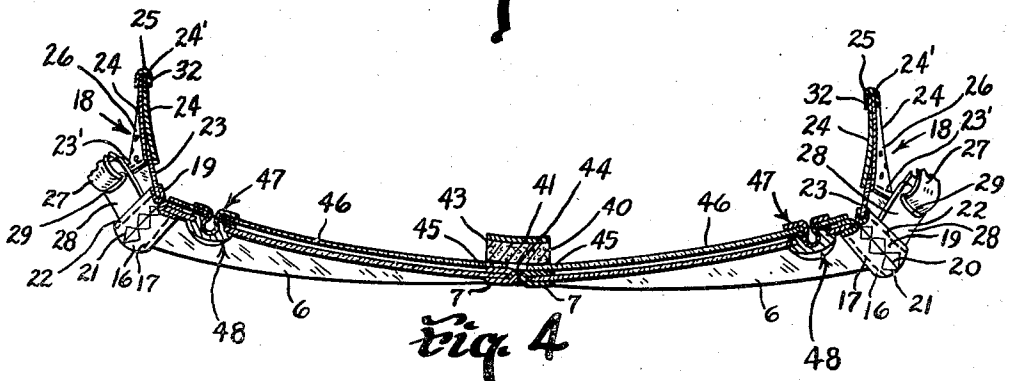


Fig. 4

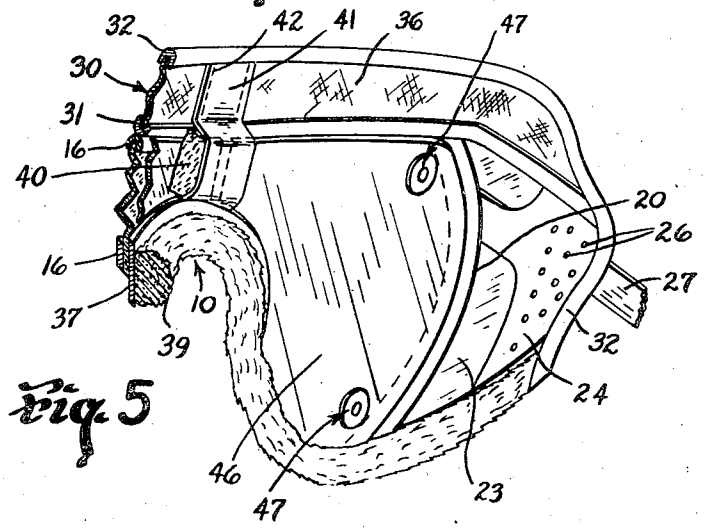


Fig. 5

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EYE PROTECTIVE MEANS

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4 Claims. (Cl. 2—14)

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This invention relates to eye protection means and more particularly to novel shield type protection means which may be folded when not in use and extended to afford substantially maximum field of vision with a relatively tight seal with the face.

One of the principal objects of the invention is to provide a light weight shield type eye protection device which is adapted for a wide range of use and which will permit the said parts to be folded in compact relation with each other when not in use and when, in position of use, will afford a relatively wide field of vision with a relatively tight seal with the face.

Another object is to provide a shield type protection device of the above character having main lens portions joined with each other by a central hinge member in combination with side shields and a substantially central spacer member for supporting said main lens portions a proper distance from the eyes when in position of use, with said main lens members having connection means to which auxiliary lens members may be detachably secured with a portion of said auxiliary lens members interengaging with the flexible spacer member for supporting said auxiliary lens members in position of use and for permitting the parts of the device to be folded in compact relation with each other when not in use.

Another object is to provide auxiliary lens members which may be secured to the main lens members internally of the device.

Another object is to provide a device of the above character having its various parts joined with each other so as to permit said parts to be folded in compact relation with each other and yet provide a relatively tight seal with the face in combination with novel means of ventilation whereby the device may be subjected to a wide variety of uses.

Another object is to provide simple, efficient and economical means and method of producing a device of the above character.

Other objects and advantages of the invention will become apparent from the following description taken in connection with the accompanying drawings and it will be apparent that many changes may be made in the details of construction, arrangement of parts and methods shown and described without departing from the spirit of the invention as expressed in the accompanying claims. I, therefore, do not wish to be limited to the exact details of construction, arrangement of parts and steps of the method shown and described as the preferred form only has been given by way of illustration.

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The device embodying the invention is intended as a general utility eye protection means, particularly adaptable for use in protecting the eyes from dust, wind, glare and so forth and is so constructed that the parts thereof may be folded in compact relation with each other for ease of conveyance and when the parts are extended to position of use will afford the maximum protection with extreme lightness in weight and comfort and which will permit the use of a plurality of auxiliary lenses having different characteristics for adapting the device to specific desired uses.

Referring to the drawings:

Fig. 1 is a front elevational view of the device embodying the invention;

Fig. 2 is an enlarged fragmentary sectional view taken as on line 2—2 of Fig. 1;

Fig. 3 is a face view of a pair of auxiliary lens units;

Fig. 4 is a sectional view taken as on line 4—4 of Fig. 1; and

Fig. 5 is a fragmentary rear elevational view partially in section of the device illustrated in Fig. 1.

Referring more particularly to the drawings wherein like characters of reference designate like parts throughout the several views, the device embodying the invention comprises two main transparent shields or lens portions 6 joined adjacent the nasal sides thereof by a flexible hinge member 7 formed of strips 7' of leather or other pliable material folded over the adjacent edges of the shield members and secured thereto by stitchings or the like 8. The strips of leather or other material 7' are then joined to each other by stitchings or the like 9. The shields or lens members 6 may be formed of any desirable transparent sheet material such as methyl methacrylate, transparent cellulose acetate or cellulose nitrate or any other desired transparent material permitting the stitchings 8 to be formed therethrough. The shields or lens members 6 are preferably formed of crystal clear material simulating the transparency of ordinary glass lenses.

The shields or lens members 6 when joined with each other by the hinge member 7 are so shaped as to provide a recess 10 intermediate the lower edge thereof shaped to fit about the nose of the wearer. The said shields or lens members 6 progress downwardly from said intermediate recessed portion and thence curve outwardly as indicated at 11 to fit over the cheek bones under the eyes and then extend upwardly along out-

wardly curved side edges 12. The side edges 12 terminate in converging portions 13 above the eyes which join with the upper edges 14 at a relatively obtuse angle. The upper edges 14 of the respective lenses curve slightly downwardly intermediate the nasal and temporal side of the lenses and thence curve slightly upwardly as indicated at 15 adjacent the location of the hinge member 7. This arrangement provides a relatively wide field of vision through the lenses. The edges of the lenses are provided with bindings of leather or other suitable material 16 which are secured thereto by stitchings or the like 17. The bindings 16, as shown in Fig. IV, are in the form of strips of leather or the like folded over the edges of the shields or lens members 6 to substantially a U-shaped cross-section throughout the top and sides of said shields and lens members. The binding 16 throughout the lower edges of the lenses, however, overlies only the front surface of the lenses with its lower edge following substantially the line of the lower edge of the lens. This is best shown in Fig. 5. The said device is provided at the sides with side shield members 18 having a forward edge binding 19 thereon simulating the side edge binding 16 of the main shield portion 6. The forward edge 20 of the side shield members 18 are curved forwardly about an arc of curvature substantially similar to that of the outwardly curving arc of the edges 12 of the main shield or lens members 6. The said bindings 16 and 19 are hingedly connected with each other throughout the sides of the main shield portions or lenses 6 and the front of the side shield members 18 by suitable stitchings or the like 21. It is to be understood that the binding at 19 is secured to the side shield 18 by suitable stitchings or the like 22 simulating the stitchings 17. The side shield members 18 are provided with portions 23 formed of material generally similar to the main shield portions or lenses 6 or which, if desired, may be formed of opaque sheet material. The portions 23 have secured thereto by stitching or the like 23' flexible sections of leather or other suitable material 24 having rear edge portions 24' provided with bindings 25 and shaped to engage the face. The portions 24 may or may not be provided with a plurality of vent openings 26. A headband 27 is connected with a flap of flexible material 28 having its forward end secured between the binder 19 and the section 23 by the stitchings 22 and is provided with a slotted portion 29 through which the headband is threaded as illustrated in Fig. 4. The ventilation openings 26 are provided in the side shields 18 when the portions 23 are formed of transparent material but when formed of opaque material the said vent openings are preferably omitted. Throughout the upper edges of the main shields or lens portions 6 and the respective upper edges of the side shield portions 18 there is provided a flexible spacer member 30. The spacer member 30 is preferably formed of leather or other suitable flexible material and is provided along its opposed edges with suitable binding means 31 and 32. The said binding means 31 and 32, like the adjacent binding means 16, folds over the edges of the spacer member 30 with a U-shaped cross section. The binding means 31 and 16 throughout the upper edges of the lenses and throughout the upper edges of the side shields are hingedly connected with each other by suitable stitchings or the like 34. The binding means 32, as shown in Fig. 5, not only extends throughout the free edge of the

spacer member 30 but also extends downwardly about the rear edges of the side shields and is secured in position by suitable stitchings simulating the stitchings 17 or 22. The spacer member 30, internally thereof, is provided with a lining of filtering material such as felt or the like 36 and is provided with a plurality of vent openings 37. The strip of filtering material 36 overlies the plurality of vent openings 37, as shown in Fig. 1. The opposed edges of the filtering material 26 are secured within the bindings 31 and 32 as best shown in Fig. 5.

The lower edges of the lenses 6 are provided with a pinked leather edge portion 37 secured in position by the stitchings 38 by means of which the binding 16 is simultaneously secured throughout said lower edges of the lenses. The pinked leather edge 37 is provided substantially throughout the inner surface thereof with a cushion edging 39 of any suitable resilient or flexible material such as rubber, fibrous felt or the like.

Internally of the device and adjacent the hinge 7 there is provided a spacer pad 40 of rubber or other suitable resilient material. The pad 40 is secured to a strip of leather or the like 41 which is in turn secured adjacent its upper edge to the spacer member 30 by stitchings or the like 42 and is secured throughout its lower end by a portion thereof extending between the pinked leather edging 37 and the main lens portions. The spacer pad 40 may be secured to the leather strip 41 by suitable adhesive or the like throughout the inner contiguous surfaces 43. The said spacer pad is thereby loosely supported by the leather strip 41, see Fig. 4, and provides a space 44 between the lenses 6 and the pad 40 into which the ends 45 of the auxiliary lens or shield members 46 may be extended. Each of the auxiliary lenses or shield members 46 are provided with spaced male clip portions 47 adapted to be connected with spaced female snap fastener portions 48 carried by the main lenses or shield portions 6.

The details of the snap fasteners are shown best in Fig. 2 with the female portion 48 having an internal flanged portion 49 adapted to secure the main lens portion 6 between the main member 48 and said flanged portion 49. The male member 47 is secured in position with the auxiliary lenses 46 by means of a washer-like member 50 and internal flange portion 51 between which the auxiliary lense or shield 46 is secured.

The auxiliary lenses 46 may be formed of any suitable transparent material, such as red filtering material for dark adaptation or for viewing tracer bullets; a green filter for use in the sun; an amber colored filter for use in haze or may be formed of Polaroid material for use in polarizing the light entering the device.

When it is desired to interchange one set of the auxiliary lenses for another set, the said auxiliary lenses are merely snapped loose by releasing the male portions 47 from the female portions 48 of the snap fasteners and by drawing the ends 45 outwardly of the space 44 between the spacer pad 40 and the main lens members 6. It is particularly pointed out that the ends 45, as shown in Fig. 4, when in position of use, are in spaced relation with each other whereby the main lens portions 6 may be swung about the hinge 7 to fit the face. This permits the ends 45 to slide longitudinally of the space 44 beneath the spacer pad 40 and also permits the lenses 6 to be folded relative to each other when it is

desired to fold the parts of the device into compact relation with each other.

The headband 27 may be of any of the known commercially used types connected by a suitable buckle or fastening device to secure the said headband about the head. The snap fasteners 47 show one convenient means of securing the auxiliary lens members 46 into position of use but it is to be understood that any other suitable mechanical means may be employed.

It is particularly pointed out that the auxiliary lens members 46 are secured internally of the main lens members for the purpose of preventing the collection of dust, dirt and the like between the lenses. It is quite apparent that when the device is in fitted relation with the face no dirt or dust can gain access to the interior of the device and therefore will not collect between the lenses. The snap fastening means 47 and 48 are so designed that the washer member 50 and flange 49 will retain the auxiliary lenses in spaced relation with the main lens portions 6. The leather strips 7 of the hinge member, as shown in Fig. 4, will also function as spacer means internally of the device between the main lens portions 6 and the spacer pad 40.

The complete device is extremely light in weight and comfortable in use and when not in use may be folded so that the various parts thereof are in compact relation with each other for ease of conveyance.

From the foregoing description it will be seen that simple, efficient and economical means and methods have been provided for accomplishing all of the objects and advantages of the invention.

Having described my invention, I claim:

1. In a device of the character described the combination of a main shield means, side shield members secured to the opposed sides of said main shield means, a spacer pad of resilient material supported intermediate the main shield means, the opposed sides of said pad being spaced from the inner surface of said main shield means to provide attachment recesses, auxiliary shield means comprising two sections which when supported in position of use are shaped substantially to the shape of the main shield means, each of said auxiliary shield means having an inner end portion shaped to extend within one of said attachment recesses and detachable means for securing said auxiliary shield means in superimposed relation with the main shield means.

2. In a device of the character described the combination of a pair of transparent eye shield members hingedly connected with each other and having their lower portions shaped to provide a nasal recess adjacent the hinged connection, side shield members hingedly connected with the eye shield members adjacent the side edges thereof, binding means about the edges of the eye shields and side shield members, a flexible spacer member secured throughout the upper edges of the eye shield members and to a portion of the upper edges of the side shield members to space the

upper edges of the said eye shields and side shield members from the face of the wearer, a nose pad adapted to overlie the eye shield members at their connection edges, nose pad supporting means attached at one end to the spacer member and with the opposed end attached to the binding of the eye shields with the said nose pad connected to the support intermediate the connected ends, auxiliary transparent shield members shaped substantially to the contour shape of the eye shield members, means at the outer edges of said auxiliary shield members cooperating with means on said eye shield members for detachably connecting said auxiliary shield members in superimposed relation with the eye shield members with the nasal portions of the auixiliary shields adapted to be positioned between the nose pad and the main eye shields.

3. In a device of the character described a main shield member embodying two lens sections hingedly connected with each other and having portions shaped to provide a nasal recess in alignment with the hinged portion, a spacer pad of compressible resilient material secured to said device adjacent the hinged portions in such a manner as to permit said lens sections to be folded to superimposed relation with each other and to a position in substantially the same plane relative to each other, a pair of auxiliary shield sections shaped substantially to the contour shape of the respective lens sections, each of said auxiliary shield sections having a portion shaped to be extended between the pad and the adjacent hinged portions of the main shield member and snap fastener means having portions carried by said auxiliary shield sections and main shield member and said lens sections for further supporting the said auxiliary shield sections in alignment with said main lens section.

4. In a device of the character described having as a portion thereof main shield means of transparent material formed of two sections joined by a hinge member and having a nasal recess in the lower edge thereof and a spacer pad secured to said device adjacent said hinge member and in alignment with said nasal recess, a pair of auxiliary shield members of transparent material comprising two sections which when in supported relation with the main shield means have substantially the same contour shape as said main shield means and each having a portion adapted to extend between the spacer pad and the hinge member and means adjacent the outer sides of said auxiliary shield members for detachably connecting them with the main shield means and functioning cooperatively with the spacer pad for supporting the auxiliary members in alignment with the main shield means, said spacer pad being so secured to the device as to permit the auxiliary members to be folded with the main shield means relative to the hinge while retaining them in superimposed relation.

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