INTELLECTUAL PROPERTY OFFICE OF SINGAPORE
PATENT AGENTS QUALIFYING EXAMINATION 2019

PAPER A: PREPARATION OF A PATENT SPECIFICATION
2 December 2019, Monday
1330 – 1730 hrs

Maximum Time: 4 Hours (includes reading time) Maximum Marks: 100

INTELLECTUAL PROPERTY OFFICE OF SINGAPORE

INSTRUCTIONS TO CANDIDATES

1. This Question Paper consists of 20 pages, including this cover page and 1 blank page.

2. Type your answers in English. Answers in any other language will not be marked.

3. You are given one hard copy of the Question Paper. The soft copy of the Question Paper is also provided in the given laptop.

4. Only answers and/or drawings typed or indicated in the Answer Script template provided by the Examination Secretariat will be considered. Candidates should not change the given format of the Answer Script or type in the margin.

5. The information provided in the Question Paper may be obtained from actual situations or modified therefrom for the purpose of this examination. You should accept the facts given in the paper and assume that the prior art given is exhaustive.

6. The documents provided in this Question Paper are:

    a. Cover Page (1 page);
    b. Details of Client Requirements (2 pages);
    c. Document A: New Invention (6 pages including drawings);
    d. Document B: Sample A (1 page of drawings); and
    e. Document C: Sample B (1 page of drawings).
    f. Document D: Sample C (8 pages including drawings)

END

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Details of Client Requirements (1/2)

Your client Tony has arranged to meet you regarding a new invention relating to protective glasses for sports activities. Tony recently underwent eye surgery and in order to protect his eyes during sports activities going forward, his doctor recommended that he uses protective glasses.

Tony has been shopping around for suitable glasses ever since, but has not found a solution that suits him. He brings two sketches of samples to the meeting, Sample A and Sample B. Sample A is a popular design close to the design of sun-glasses, but with high strength frame material as well as impact resistant lenses. Like most protective glasses, they typically come with a partial headband that attaches to the ends of the temple bars. However, Tony is concerned that such a design, with the frame spaced from the forehead and temples, may not provide adequate protection during impact on the frame, in particular near the temples. Specifically, Tony is concerned that the frame will be bent to a large extent towards the temple under an external force during impact, which may result in injury to the forehead and/or temple. In a worst case scenario, this excessive bending may result in breakage of the frame which in turn may pose a severe injury risk.

Tony also found protective glasses of a different design, such as Sample B, in which the frame is contoured around the wearer's face, i.e. the forehead and the temples. In such designs, the frame is very close to, if not in contact with the forehead and temples, which overcomes the problems mentioned above with reference to Sample A. Typically, a rubber cushioning is provided along the surface of the frame that faces the wearer's head and temples, which assists dampening an external force during impact and minimizing bending of the frame during impact. However, because the frame in such designs is very close to, or touches the forehead and the temples, such glasses have a problem with fogging since air circulation is very limited. While various anti-fogging techniques may be implemented in such glasses, such as providing vent holes in the body of the rubber cushioning, those typically add significantly to the cost of manufacture and thus the price of the protective glasses to customers. Another related issue with Sample B is that, because the lenses are also close to the wearer's eyes, there may be discomfort experienced if the wearer's eye lashes touch the lenses.

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Details of Client Requirements (2/2)

Because Tony could not find suitable protective glasses in the market, he has come up with his own design, as shown and described in the Invention Disclosure document he brings to the meeting. Tony believes that his design overcomes the problems of Samples A and B. Tony notes that he has only focused on a description of the new design in the Invention Disclosure, which may include some statements which are too limiting. Tony asks you to edit such statements and also asks that you incorporate a brief explanation of the advantages of his new design as compared to existing designs as explained during the meeting, as appropriate.

Tony instructs you to prepare and file a Singapore patent application for his invention. He also mentions that a major European eyewear company has recently opened a large-scale manufacturing factory in Singapore which serves the entire Southeast Asian region. Tony understands that this factory also produces protective glasses. Because Tony believes that a version of this new design can be readily manufactured with only a few additional steps in the production process of existing protective glasses, he hopes that protection for a manufacturing process can be included in the patent application as well. To guard against issues with claim fees, he wishes that the application does not have more than 10 claims in total, and he does not want to pay any additional search fees or file a divisional application later. He also asks you to conduct a quick prior art search during the drafting process, and incorporate the differences and advantages from any identified prior art in the specification.

Sample C is an extract from a patent document you have identified during the search.

Please proceed to draft a specification for a Singapore patent application in accordance with your client's instructions. For avoidance of doubt, you may regard Samples A, B and C as prior art documents.

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Document A: New Invention (1/6)

Protective Glasses

As shown in Figures 1 and 2, the protective glasses 100 have a frame 102 which is contoured to a wearer's head 104. Specifically, the frame 102 supports two lenses 106, 108 in alignment with the wearer's eyes. The lenses may be prescription or non-prescription, and are made of impact resistance material. Suitable materials are known in the industry, such as Polycarbonate for the lenses 106, 108, and blended nylon for the frame 102.

On each side, side portions 114, 116 of the frame 102 each extends partially around the temples of the wearer's head 104. Pads 110, 112 are provided on those portions 114, 116 of the frame 102. The pads 110, 112 extend towards the temples of the wearer's head 104 such that surfaces 118, 120 are close to, or are touching the temples, which will also depend on the exact shape of the wearer's head. The frame 102 may be custom designed to best fit a wearer's head, but may instead be manufactured in a set of generic sizes and contours. Ideally, the surfaces just touch the temples when the glasses 100 are properly worn.

Temple bars 122, 124 are connected to the frame portions 114, 116. It is best that the glasses 100 are sold with a partial headband that is attachable to the ends of the temple bars 122, 124. Different designs of the partial headband are possible, including the design 300 shown in Figures 3 in which a strap 300 is doubled back via an eye of a clip 302 at one end and connected to a friction fitted coupling 304 which can be positioned along the strap 300 to tighten around the wearer's head when worn. In this embodiment, the ends include hooks 310, 312 which can be inserted into openings 123, 125 (Figure 1) formed in the ends of the temple bars 122, 124 (Figure 1). It is noted that in different examples, a full headband connected directly to the side portions 114, 116 can be used instead.

With reference to Figure 4, under an external force 400 impacting on the frame 102 near one temple of the wearer's head 104 when the glasses 100 are worn, bending of the frame 102 is limited due to the engagement of the pad 110 with the temple of the wearer's head 104, either immediately or upon minor movement (indicated by arrow 402) of the frame102 towards the

temple until the surface 118 of the pad 110 contacts the temple of the wearer's head 104. Accordingly, the bending, if any, of the frame 102 and associated likelihood of breakage of the frame 102 during the impact is low. This mitigates any possibility of severe injury resulting from excessive bending and/or breakage of the frame 102.

At the same time, the pads 110, 112 ensure that the frame 102 is kept at a distance from the wearer's forehead. The pads 110, 112 may cooperate with suitably sized nose pad 113 to ensure that the frame 102 is kept at a distance from the forehead of the wearer 104 along the entire length of the frame 102. Either way, the gaps e.g. 126 provide ventilation passages for both lenses to eliminate or at least reduce fogging of both lenses during use. Additionally the gaps e.g. 126 also ensure that the lenses are kept at a distance from the wearer's eye lashes.

There are different ways in which the pads 110, 112 can be incorporated into the glasses 100, and two examples are described below. Suitable materials for the pads 110, 112 include natural or synthetic rubber. It is to be appreciated that different materials may be used for the pads 110, 112 in different embodiments, provided that the material characteristics are sufficient for limiting deformation of the frame 102 under impact at or near the wearer's temple.

In one version, as shown in Figure 5, the pads 500, are formed by molding into the desired shape and are provided with a high strength double sided adhesive layer 502 on the surface 504 contoured to abut the frame 506 at the portions e.g. 508 which extend around the temples of the wearer's head (compare Figure 2). Suitable high strength double sided adhesive layers or strips are readily available, such as rubber/resin based adhesive strips, acrylic adhesive based strips, and silicone adhesive based strips. This version of the pads 500 can be easily attached to the frame during a production line process, which may include machine placing of the pads 500 on the frame in the desired location and orientation, and curing of the adhesive using heat and/or pressure.

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Document A: New Invention (3/6)

In another version, as shown in Figure 6, the pads 600 and the portions e.g. 602, which extend at least partially around the temples of the wearer's head when the frame 604 is worn, are configured for co-operative mechanical mounting of the pads 600. In this example, the portions e.g. 602 include an opening 606 shaped to receive a connecting section 607 protruding the surface 608 of the pads 600, which surface 608 is contoured to abut the portions e.g. 602 in the areas around the connecting section 607. A threaded through-hole 610 is formed on the portions e.g. 602 for receiving a screw 612. The connecting section 607 has a recess or hole 614 disposed so that it is aligned with the threaded through-hole 610 when the connecting section 607 is fully received in the opening 604, with the surface 608 abutting the portions e.g. 602. The pads 600 are then mechanically secured to the portions e.g. 602 by inserting and tightening the screw 612. In a modification, the recess or hole 614 can be a through-hole and the portions e.g. 602 include an additional threaded recess opposite the threaded through-hole 610 so that the pads 600 can be secured by way of a longer screw being received in the additional threaded recess. While integration of this version into the production line process is more complex, this version can have the advantage of higher connection strength on the one hand, and easy replacing of the pads if required/desired. Again, the pads 600 in this version can be formed by molding into the desired shape.

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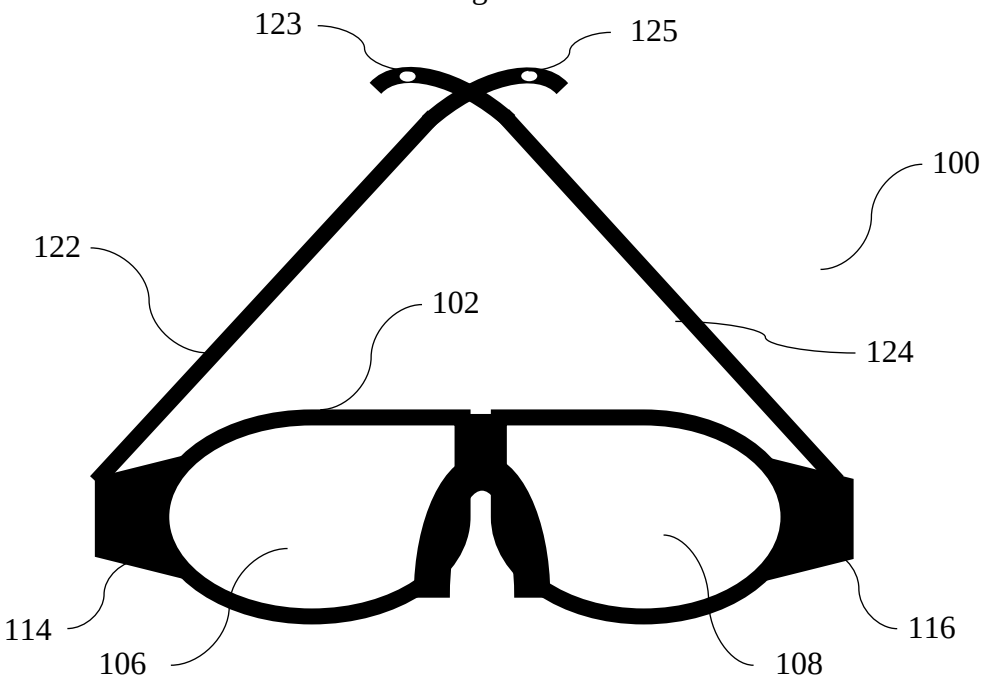
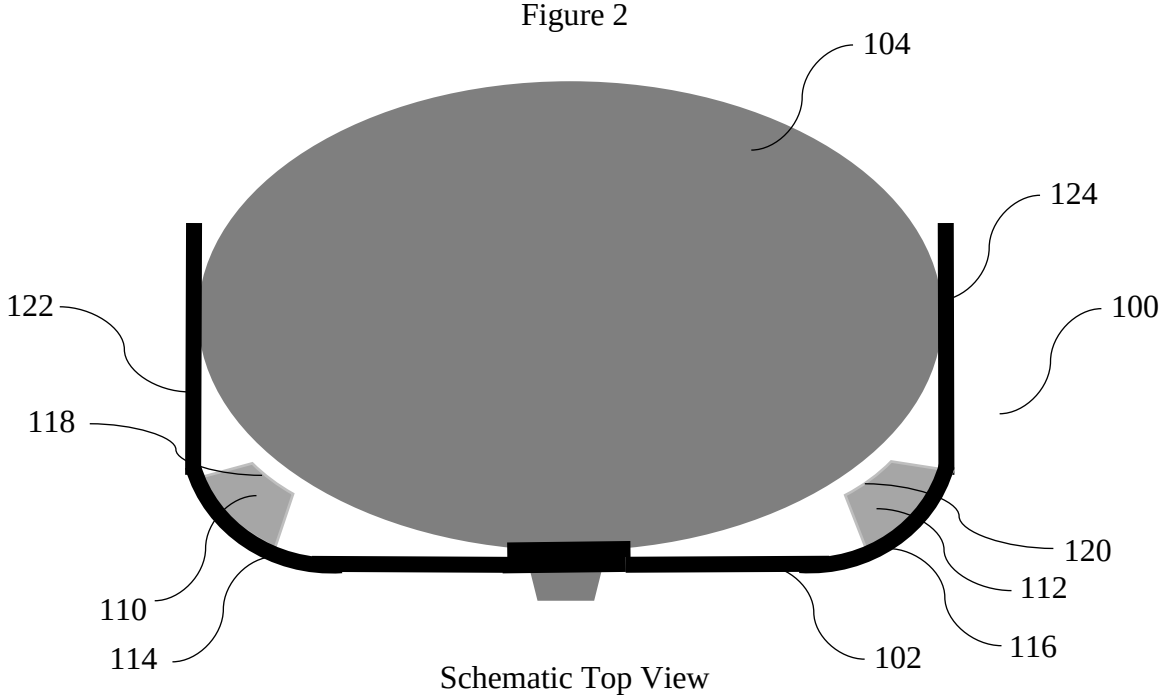
Document A: New Invention (4/6)

Figure 1



Schematic Front View

Figure 2



Schematic Top View

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Document A: New Invention (5/6)

Figure 3

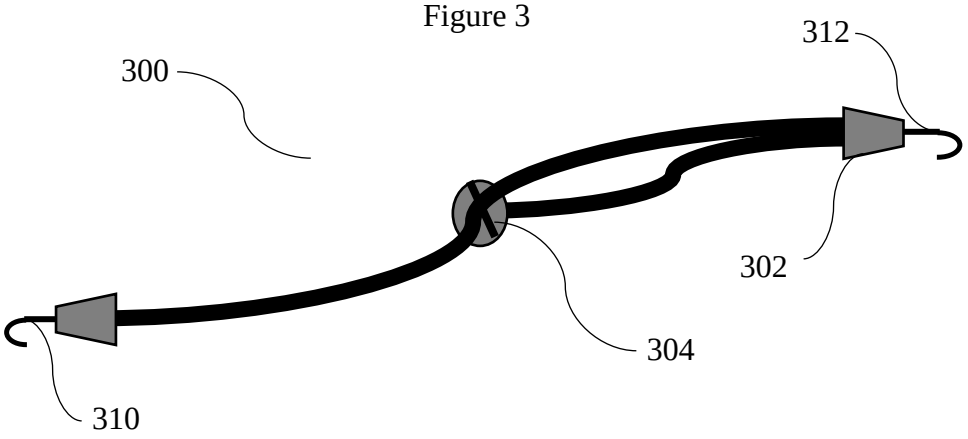
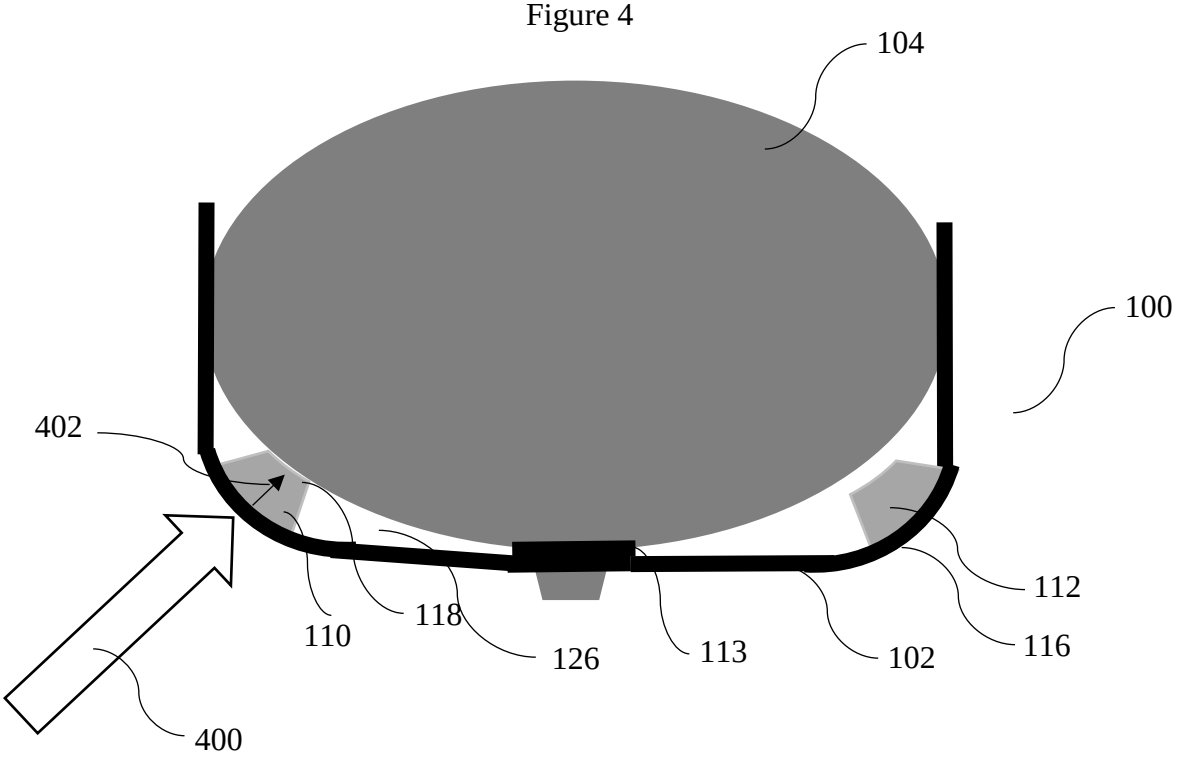


Figure 4



Schematic Top View

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Document A: New Invention (6/6)

Figure 5

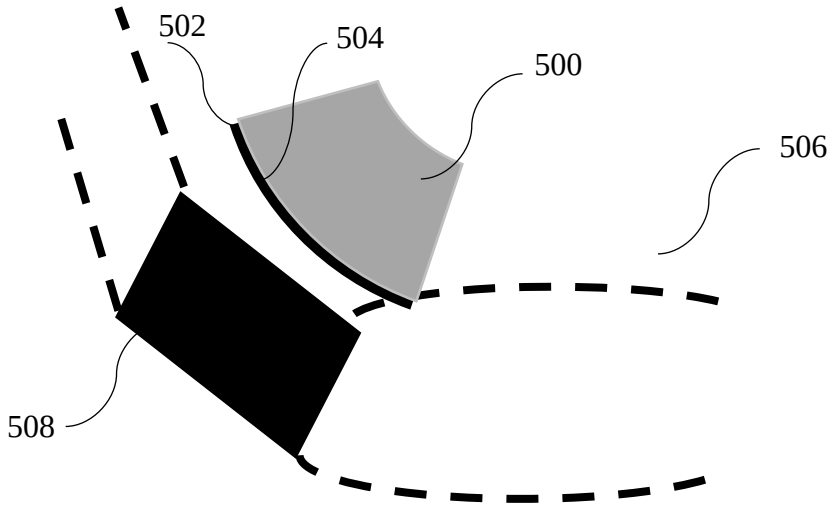
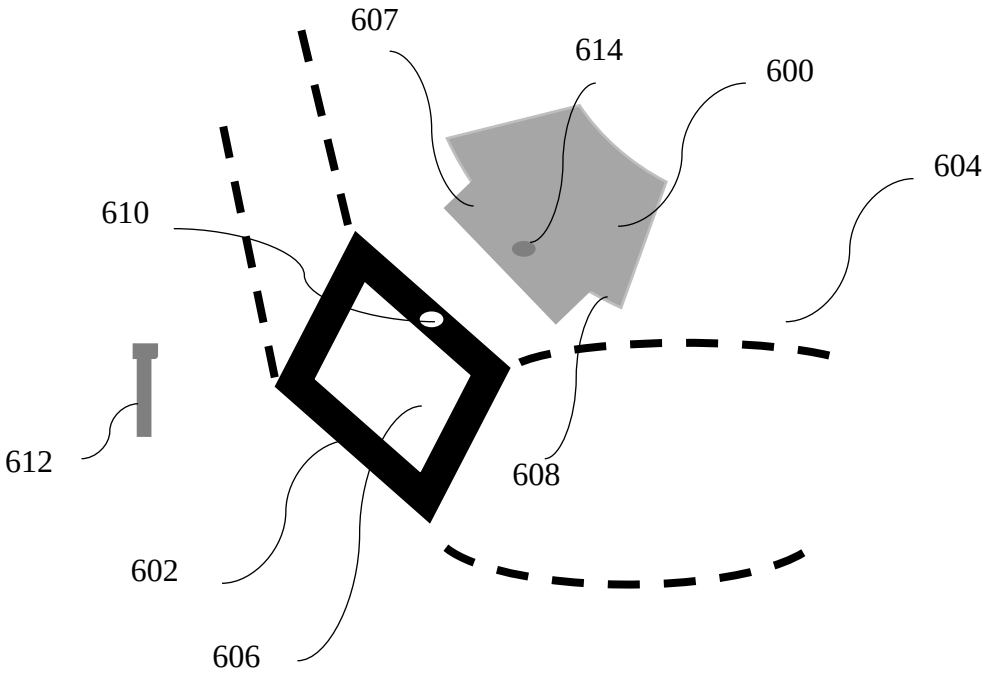


Figure 6



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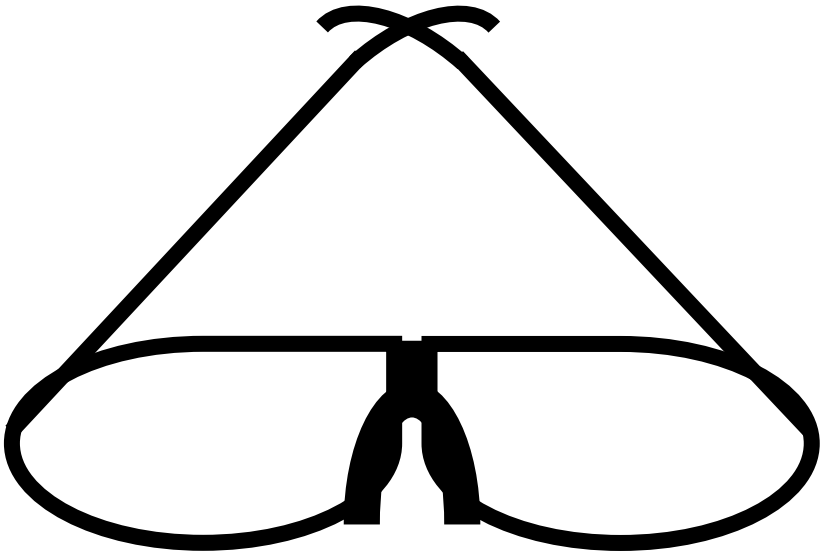
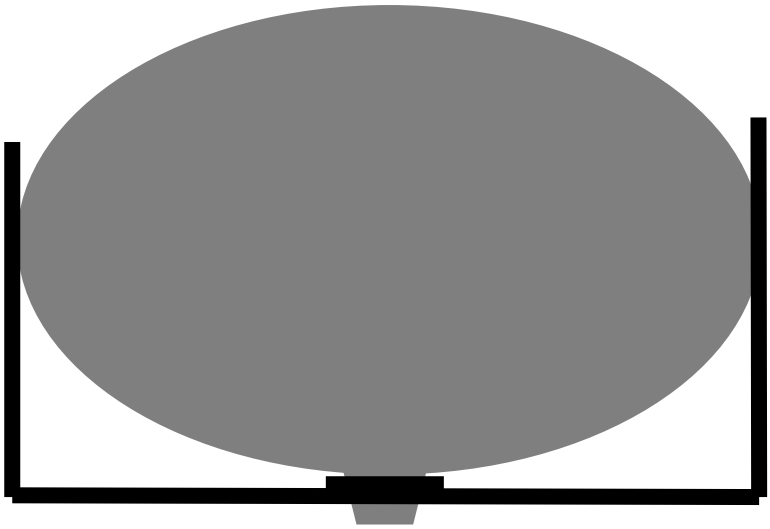
Document B: Sample A (1/1)



Schematic Front View



Schematic Top View

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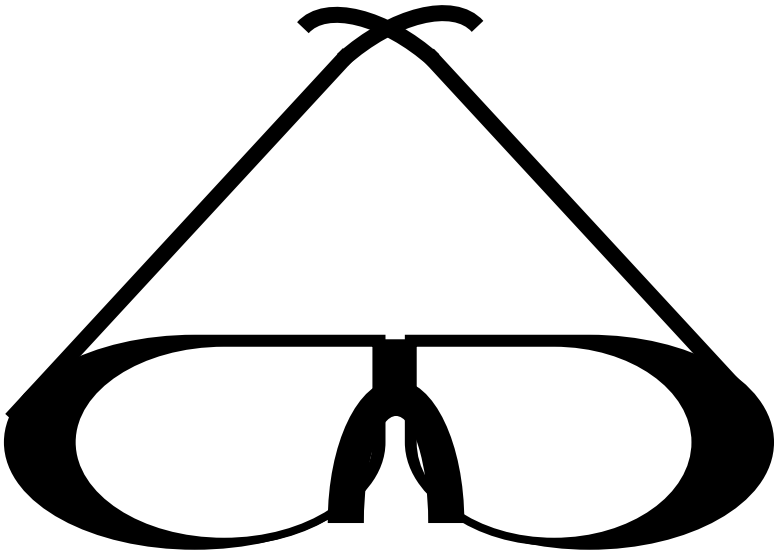
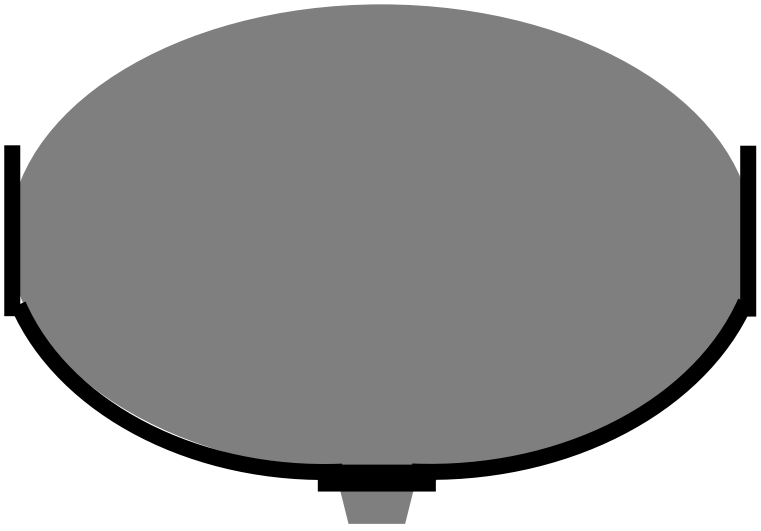
Document C: Sample B (1/1)



Schematic Front View



Schematic Top View

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Document D: Sample C (1/8)

The temple bars may also be provided with length adjustable earpieces and mastoid hooks to further aid in fitting the sports eyeglasses to the head and face of the user.

This invention is to provides protective eyewear for use in any type of weather.

Objects of the invention will become apparent upon reading the following specification and referring to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a front elevation view of sports eyeglasses shown worn by a user.

Fig. 2 is a front view of the sports eyeglasses of the present invention.

Fig. 3 is a cross section of Fig. 2 showing one embodiment of attachment of temple bar for sports eyeglasses.

Fig. 4 is a cross section of Fig. 2 showing another embodiment of attachment of temple bar for sports eyeglasses.

Fig. 5 is a partial side view of the right side of sports eyeglasses.

Fig. 6 is a cross section of the web taken along section 6-6 of Fig. 2, showing the position of the eye when worn by the wearer.

Document D: Sample C (2/8)

Fig. 7 is a front view of sports eyeglasses, having orbital sealing gaskets, with the lenses removed.

Fig. 8 is a cross section of the web taken along section 8-8 of Fig. 7, showing the position of the eye when worn by the wearer.

Fig. 9 is a front elevation view of another embodiment of sports eyeglasses having a single lens.

Fig. 10 is a front elevation view of another embodiment of sports eyeglasses.

Fig. 11 is a left side view of the temple bar and frame orbital adjusting connection.

Fig. 12 is a bottom view of the frame and frame orbital adjusting connection.

Fig. 13 is a cross section taken along section line 13-13 of Fig. 10.

Fig. 14 is an exploded side view of the left temple bar.

Fig. 15 is partial cutaway assembled view of Fig. 14.

Fig. 16 is an analogous view to that of Fig. 13 showing another embodiment of the sports eyeglasses having perspiration channel in the upper portion of the orbital sealing gasket.

Description of the Preferred Embodiments

Referring now to Figs. 1-16, sports eyeglasses

Document D: Sample C (3/8)

20 are shown. Generally, sports eyeglasses 20 have a frame 21 which is attached to temple bars 36 and 38. Temple bars 36 and 38 are adapted to support the frame 21 on the wearer's head. In one embodiment, shown in Fig. 3, the temple bars 36 and 38 are attached to the frame 21 with 90 degree angle hinge 35. In Fig. 4, another embodiment, the frame 21 is extended to accommodate attachment of the temple bars 36 and 38 with 180 degree angle hinge 37. Temple bars 36 and 38 may further be provided with mastoid hooks (not shown) which enhance the securing capability of the temple bars 36 and 38.

The frame 21 is contoured in a wrap around configuration and has right lens opening 44 and left lens opening 45 in the lens support area 30. As shown in Figs. 1-16, the frame 21 has a pair of eye apertures 22 and 24 which are adapted to be aligned with the wearer's eyes. Lens support area 30 surrounds the eye apertures 22 and 24. Each eye aperture 22 and 24 is provided with a sealing area 26 and 28, respectively, which surrounds the eye aperture 22 or 24, and which snugly fits against the skin of the wearer adjacent to the eye. Referring to Figs. 3, 6 and 8, it is shown that the eye itself is forward of the sealing area 26 or 28 when the sports eyeglasses 20 are properly positioned on the face 23 of the wearer.

Document D: Sample C (4/8)

Webs 32 and 34 diverge from each sealing area 26 and 28, respectively to the lens support area 30 for enclosure of each eye without obstructing peripheral vision. Webs 32 and 34 attach to the interior side 42 of frame 21 at its divergent side. As shown in Fig. 3, the wearer is able to see at least 140 degrees and preferably over 160 degrees of peripheral vision with both eyes as indicated by the peripheral vision angle 162 in Fig. 4. The webs 32 and 34 may be provided with vent holes 73 to promote air circulation. The vent holes may be continuous with air grooves situated on the inner aspect of the lens support area but not evident from the front view. Vent holes 73 may be covered with cellular foam material 29 to further shield the user.

It can be seen that sports eyeglasses 20 are contoured to wrap around and closely fit the orbital area of the user which is the area barred by the user's nose, eyebrow and cheek bone. The exterior side 43 of sports eyeglasses 20 has a generally standard singles appearance, while the interior side 42, shown, for example, in Fig. 12, has more of a goggle-type appearance.

The lens support area 30 supports at least one lens. Typically, two lenses 46 and 47 are housed by the lens support area 30 in the frame 21. However, as shown in Fig. 9, a continuous lens which covers

Document D: Sample C (5/8)

both right lens opening 44 and left lens opening 45 may be used. The lenses may be of single or double-walled construction, as illustrated in Fig. 13. In a double-walled construction, the lenses may have an airspace 76 and different radii of curvature. The double walled lenses may also have a single peripheral edge.

Between right lens opening 44 and left lens opening 45 there is positioned a ram air intake 51 for directing filtered air into the eye chamber through the vent holes. Referring to Fig. 10, ram air intake 51 may be covered with ram air intake filter cover 52. Construction of ram air intake filter cover 52 typically can be from a thin breathable cellular foam material.

Alternatively, ram air intake 51 can be circumferentially covered on the inner side so that the ram air intake 51 appears to be open when viewed from the exterior side 43 of the sports eyeglasses 20. With the circumferential covering of ram air intake 51, intake air passing through is directed venturily down through those the vents 73 enclosed by the circumferential covering in the webs 32 and 34 to enhance ventilation and decrease the formation of mist on the lenses 46 and 47 of the sports eyeglasses 20.

Document D: Sample C (6/8)

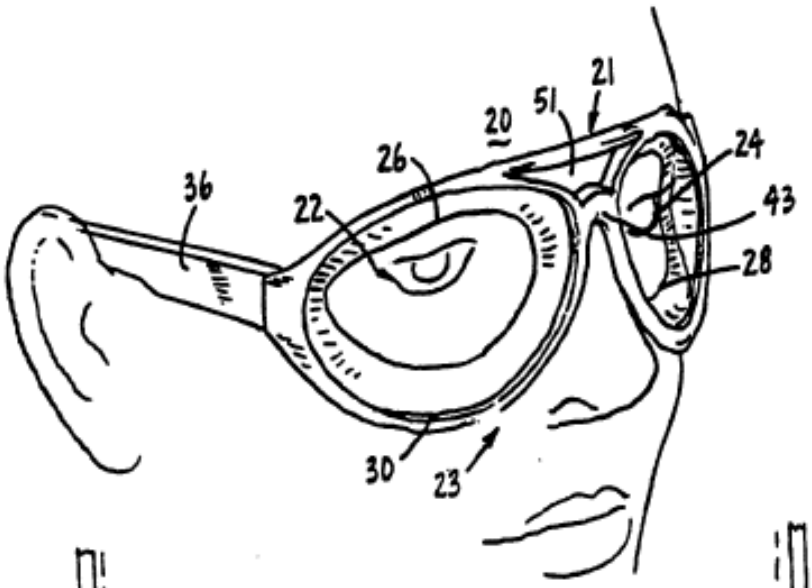

FIG. 1.

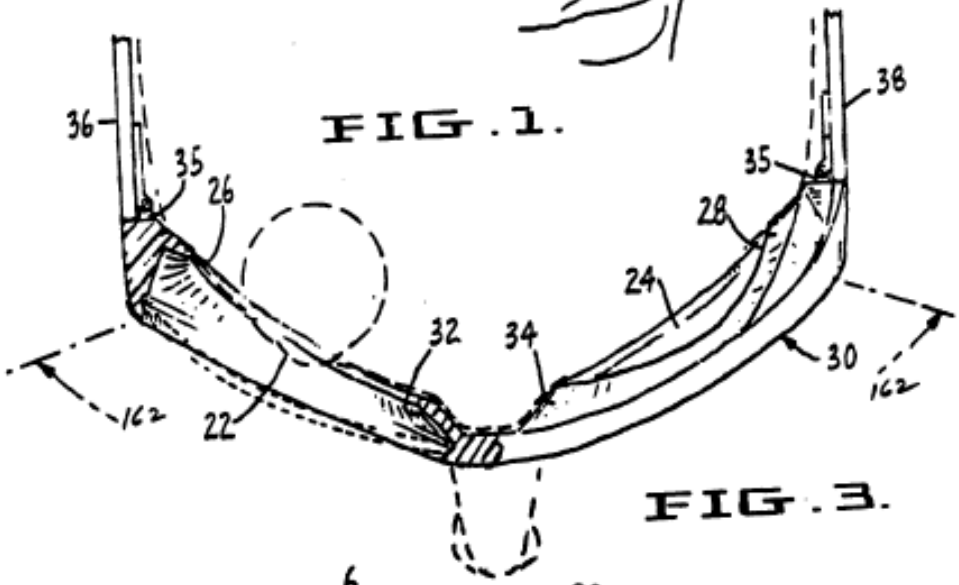

FIG. 3.

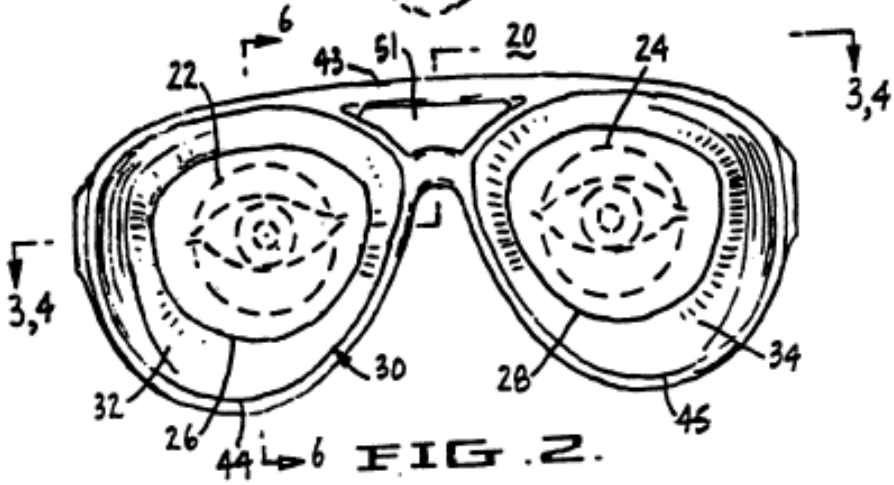

FIG. 2.

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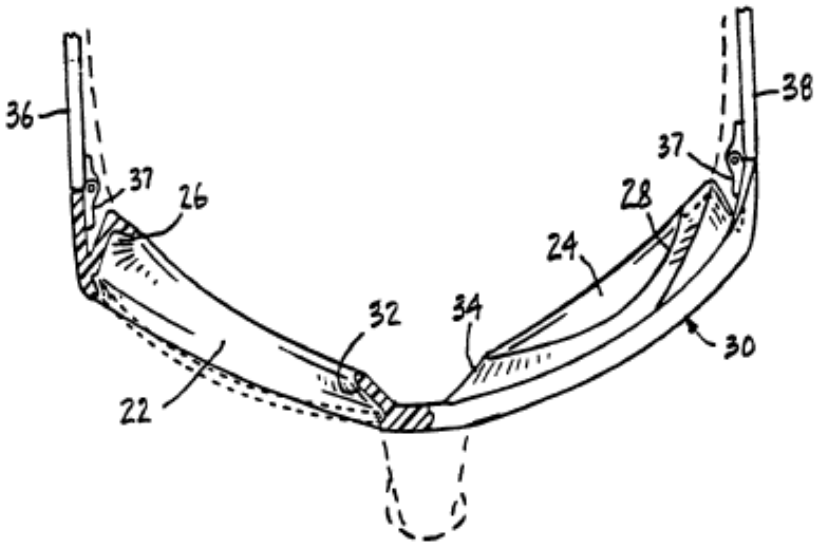

FIG. 4

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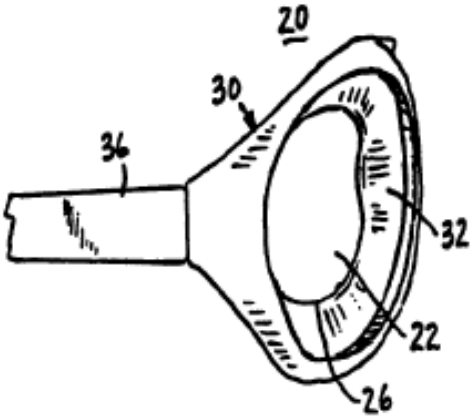

FIG.5.

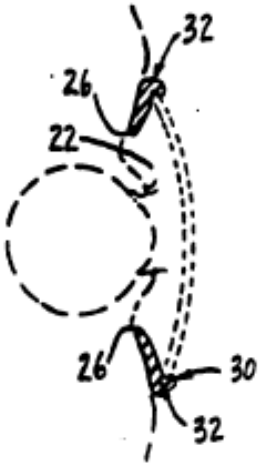

FIG.6.

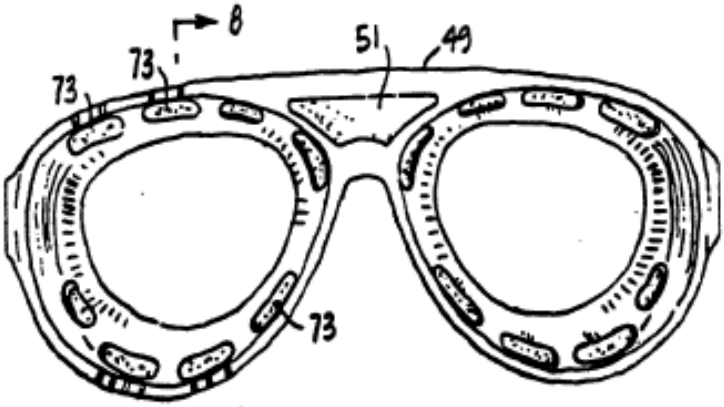

FIG.7.

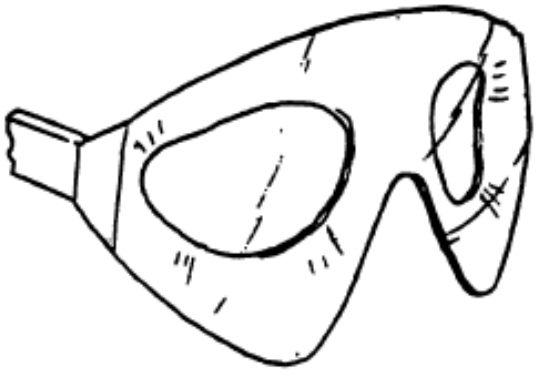

FIG.9.

FIG.8.

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