April 2, 1935. E. B. MEYROWITZ 1,996,587

GOGGLES

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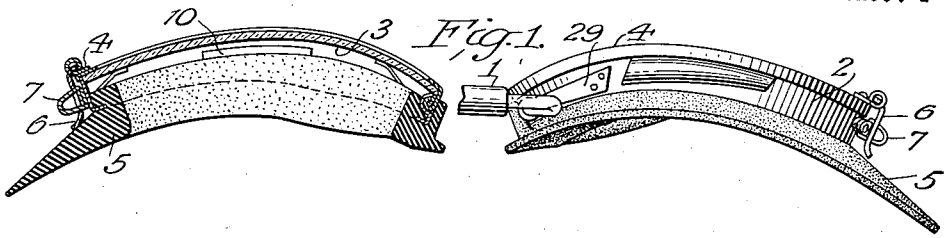

Fig. 1.

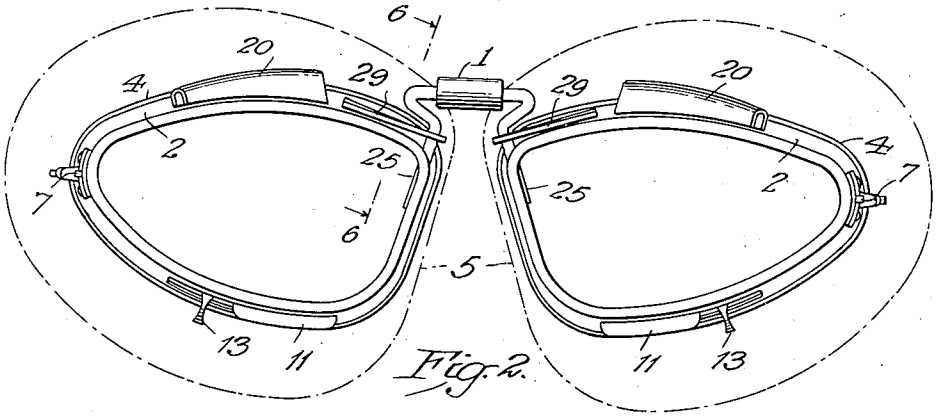

Fig. 2.

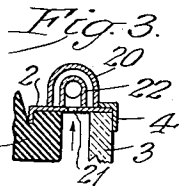

Fig. 3.

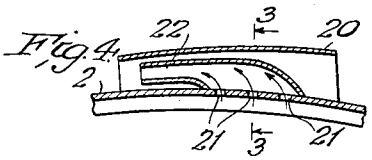

Fig. 4.

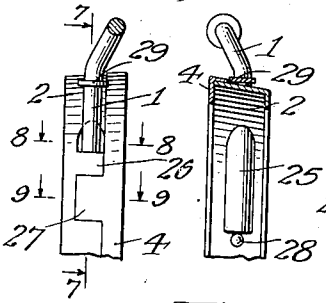

Fig. 5

Fig. 6.

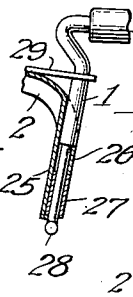

Fig. 7.

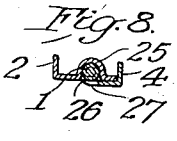

Fig. 8.

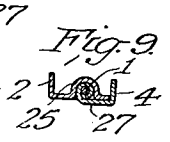

Fig. 9.

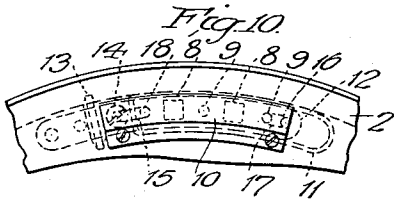

Fig. 10.

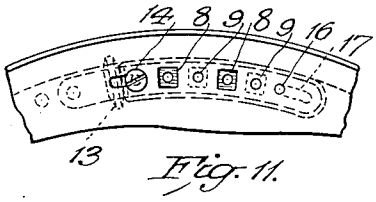

Fig. 11.

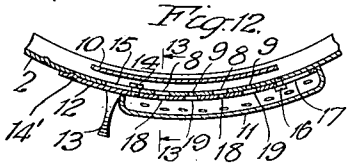

Fig. 12.

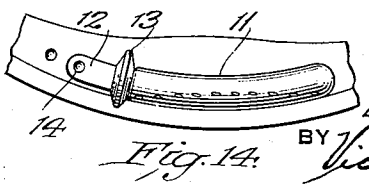

Fig. 14.

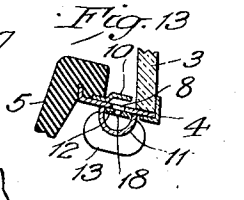

Fig. 13.

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Fig. 15.

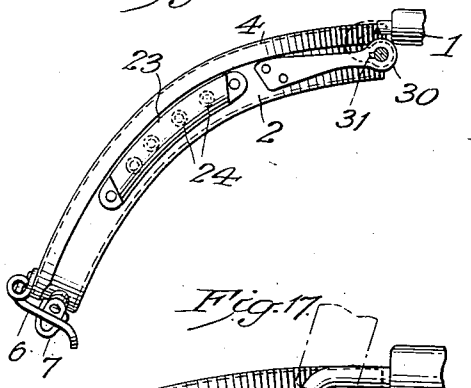

Fig. 16.

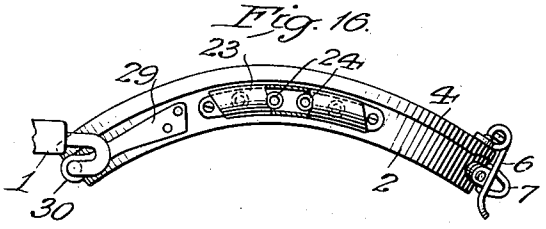

Fig. 17.

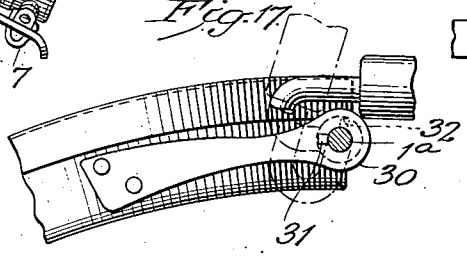

Fig. 18.

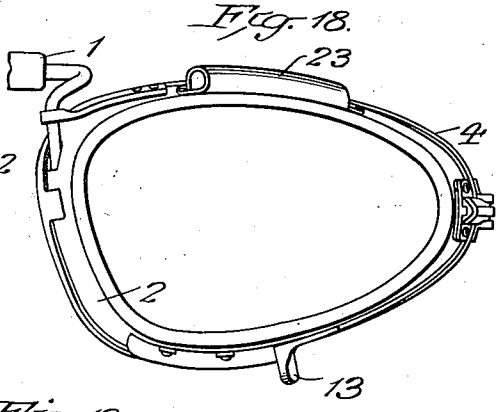

Fig. 20.

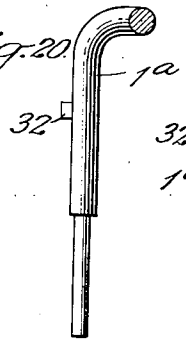

Fig. 19.

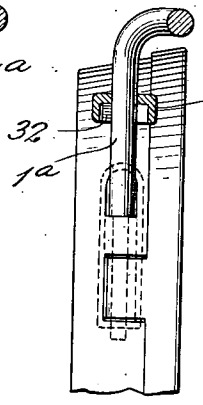

Fig. 21.

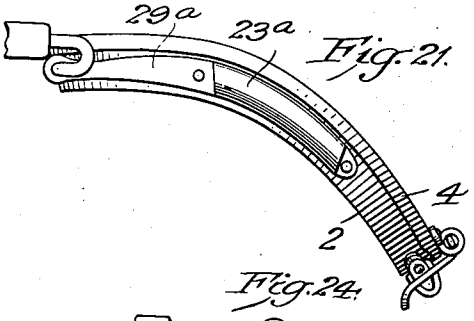

Fig. 26.

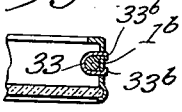

Fig. 22.

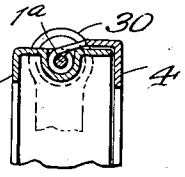

Fig. 27.

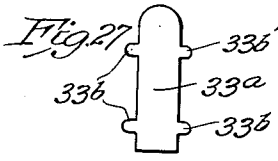

Fig. 24.

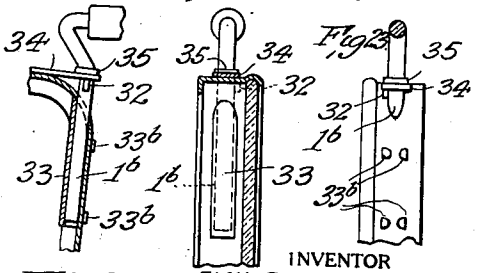

Fig. 25.

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Patented Apr. 2, 1935 1,996,587

UNITED STATES PATENT OFFICE

1,996,587

GOGGLES

Emil B. Meyrowitz, New York, N. Y., assignor to E. B. Meyrowitz, Inc., a corporation of New York

Application February 5, 1929, Serial No. 337,559

12 Claims. (Cl. 2—14)

This invention is particularly applicable to goggles for aviators and motorists where the prevention of fogging of the glasses is an essential requirement and where sturdiness of construction and ease in articulation and in replacement of parts is a desideratum. An object of my invention is to improve the ventilation of such goggles and to provide for the regulation of the ventilation according to varying conditions. Another object is to provide an improved articulated joint construction at the nasal end of the eye cups between the frame members and the legs of the bridge which will permit of easy assembly and disassembly and which will be firm and strong and will have no sharp corners or other protuberances to injure the face of the wearer when subjected to high wind pressure. Other objects are simplicity of construction and economy in manufacture. Still other objects and advantages of my invention will appear from the following description.

One of the features of my invention is the provision of a movable shutter in connection with the air inlet openings in the bottom of the eye cups which serves to regulate the size of the openings. They may advantageously be oppositely moving slides which can be conveniently operated in conjunction by means of the thumb and a finger of one hand. In this way the ventilation can be kept quite uniform under all conditions.

Another feature of my invention is improved exhausting means for the air. Communicating with the outlet openings in the top of the eye cups is a lateral draft tube, the ends of which are shaped to deflect a current of air through the tube over the outlet openings and thus induce a suction. If desired, the ends of the tube may be oppositely shaped so that one end will deflect the air through the tube in one direction if the wearer is facing the way that the airplane or other vehicle is moving, while the other end will serve to deflect the air through the tube in the opposite direction if the wearer is positioned with his back toward the direction of movement. The tube may be a Venturi tube and I have found it desirable to use the Venturi tube in conjunction with another tube leading from the outlet openings into the Venturi tube so that the two operate on the injector principle. Such a construction is, of course, limited in its operation to one direction of movement.

In accordance with my invention, the hinge joint between the frame members and the bridge is made without any sharp projecting parts liable to injure the wearer. This is done by disposing the bearing for the leg of the bridge which serves as the pivot pin within the eye cup wall and leaving the outer face free of any necessary protuberances. Since the upper inside corner of the frame member is not materially within the visual region, the presence of the bearing on the inside of the eye cup at this point will not impair the vision. In one form, for example, particularly where there is no hinged member to retain the lens in the eye cup, the eye cup may be provided with a hole to receive the leg of the bridge at the nasal end near the top and a cylindrical socket or bearing be secured inside the eye cup in line with the hole. This leaves the outer face of the eye cup at the nasal end undisturbed. Where there is a lens holder or retaining rim to hinge on the leg of the bridge, the socket may be formed by depressing the metal of the eye cup at the nasal end, thus leaving the socket open toward the outside and free to receive the knuckle of the lens holder. Above this knuckle the socket may be completed by an inserted strip disposed flush with the face of the eye cup.

Suitable means are also provided to limit inward and outward axial movement of the leg with respect to the bearing. In one embodiment the outward stop serves also to effect ready assembly and disassembly of the bridge and frame members, the parts being designed, for example, to permit assembly and disassembly in one relative angular position of the bridge and to lock the parts together when the parts are in their normal position for wearing.

My invention also comprehends other features of construction and details and arrangements of parts as will hereinafter more fully appear. I shall now describe the illustrated embodiments of my invention and shall thereafter point out my invention in claims.

Fig. 1 is a top plan of a pair of goggles embodying my invention, the left goggle being in section;

Fig. 2 is an elevation as viewed from the inner or face side;

Fig. 3 is a transverse sectional detail of the exhaust or outlet ventilating parts, being taken on line 3—3 of Fig. 4;

Fig. 4 is a longitudinal sectional elevation of the same;

Fig. 5 is a fragmentary nasal end elevation of the left frame unit;

Fig. 6 is a transverse sectional elevation of the same on line 6—6 of Fig. 2;

Fig. 7 is a circumferential sectional elevation of the same on line 7—7 of Fig. 5.

Figs. 8 and 9 are transverse sections of the same on lines 8—8 and 9—9, respectively, of Fig. 5;

Fig. 10 is a fragmentary detail in plan of the inner face of the bottom of the left eye cup, showing the air inlet structure;

Fig. 11 is a similar view with the baffle plate removed and the slide in its opposite position;

Fig. 12 is a circumferential sectional elevation of the same;

Fig. 13 is a transverse section of the same on line 13—13 of Fig. 12;

Fig. 14 is an underside or bottom plan of the same;

Fig. 15 is a top plan of a left frame unit embodying a modified construction;

Fig. 16 is a similar view of the complementary frame unit with the exhaust ventilator partially sectioned;

Fig. 17 is an enlarged plan of the nasal end of the unit as shown in Fig. 15;

Fig. 18 is an inner side elevation of the right unit shown in Fig. 16;

Fig. 19 is a nasal end elevation of a portion of the left frame unit;

Fig. 20 is a detail of the portion of the bridge shown in Fig. 19;

Fig. 21 is a view corresponding to Fig. 16 showing a further modified construction;

Fig. 22 is a bottom plan of the parts shown in Fig. 19;

Figs. 23, 24 and 25 are views corresponding to Figs. 5, 6 and 7, showing a modified form of hinge construction;

Fig. 26 is a transverse section of the same;

Fig. 27 is a detail of the blank from which the socket of this last construction is formed.

The right and left frame members are connected by a bridge member 1 upon the legs of which they articulate and they are in all respects duplicates of each other except that the parts are relatively reversed. Each frame member or unit consists of an eye cup 2, a lens 3 which is a sheet of glass or other transparent material disposed at the front edge of the eye cup, a flanged lens-retaining rim 4 which is hinged to the eye cup at its nasal end, and a protective cushion 5 of rubber or other suitable soft material which engages over an inwardly turned flange at the inner edge of the eye cup. The illustrated goggle frames are curved on their horizontal axes to conform to the contour of the face. The eye cups are sheet metal members of substantial width. The lens retaining rims telescope over the outer edge of the eye cups and at their outer ends latch to the eye cups in any usual or suitable manner. In the illustrated construction a hasp member 6 engages over a staple 7 on the eye cup, and these staples may serve as attaching means for the head band (not shown), clasps on the ends of the head band serving by their engagement in the staples 7 to lock the hasp 6 upon the staple.

The ventilating means shown in the construction of Figs. 1 to 14, inclusive, will now be described, reference being particularly had to the left frame member. Along the bottom of the eye cup there is provided a circumferential series of alternately large and small air inlet holes, the larger holes being shown as substantially square and the small holes as circular. In the construction illustrated there are two of the larger holes to which the numeral 8 is applied and there are two of the smaller holes to which the numeral 9 is applied. Over these there is a baffle plate 10 which is secured by screws or other suitable means to the inner face of the eye cup and serves to direct the incoming air against the face of the lens 3. An air deflector 11 which is soldered or otherwise suitably secured to the outer face of the eye cup over the inlet openings serves to deflect the air inwardly through the openings. In the form shown this deflector is an elongated arched member with closed ends and provided with a series of air inlet openings along its front side, these openings being progressively farther back toward the center line of the deflector from the ends toward the center.

To regulate the effective area of the inlet openings through the eye cup, a manually adjustable slide 12 is provided. This slide is disposed against the outer face of the eye cup underneath the deflector 11 and has a finger piece 13 outside the deflector. It has an inner and an outer position of adjustment, a detent 14' in the slide resiliently engaging in properly located recesses in the wall of the eye cup in the adjusted positions. At the outer end the slide engages between the end wall of the deflector 11 and the face of the eye cup and is guided by a pin 14 which travels in a slot 15 in the wall of the eye cup. At the other end a headed pin 16 in the eye cup engages in a slot 17 in the slide. The slots 15 and 17 limit the movement of the slide.

The slide is provided with a longitudinal series of alternately small and large holes adapted to register with the air inlet holes in the eye cup to which they correspond in size and shape, the small holes being numbered 18 and the large holes being numbered 19. In the inner position of the slide the small holes 18 in the slide register with the large holes 8 in the eye cup and the small holes 9 in the eye cup register with the large holes 19 in the slide. This is the condition shown in Figs. 11 and 12. In the outer position of the slide, which is the one illustrated in Fig. 10, the large holes 19 in the slide register with the large holes 8 in the eye cup, one small hole 18 registers with one small hole 9, the other small hole 18 (the one at the left in Fig. 12) is exposed through the slot 15, and the left end of the slot 17 registers with the small hole 9 at the right in Fig. 12. I have, therefore, a reduction of the area of the air inlet openings when the slide is in as compared with those openings when the slide is out. It is to be observed that the finger pieces 13 of the slides on the right and left goggles can conveniently be operated by the thumb and finger of one hand, and since they are arranged to operate oppositely, the ventilators are opened by a spreading of the two finger pieces and are closed by causing them to approach each other.

The upper or outlet ventilator construction in the form shown in Figs. 1 to 4, inclusive, is of the Venturi tube type. A laterally extending funnel-shaped tube 20 which is open at both ends covers the outlet openings 21 which are formed in a circumferential series in the wall of the eye cup at its top directly opposite the inlet openings. The Venturi tube is open at both ends, the larger end being toward the nasal end of the frame and in the illustrated construction it is formed of an arch member which is soldered or otherwise secured to the top face of the eye cup. Another tube 22 is disposed inside the Venturi tube with its outlet end directed toward the smaller end of the Venturi tube and with its opposite end enlarged and bent to embrace the outlet openings

21, being secured at that end by solder or otherwise to the face of the eye cup about the outlet openings. The inner or nasal end of the Venturi tube is bevelled so as to catch the air as the wearer moves forward and deflect the air through the tube, thereby creating a current of air which is accelerated by the contraction of the size of the tube and creates a suction at the mouth of the tube 22.

In Figs. 15, 16 and 18 a slightly modified form of exhaust ventilator is shown. Instead of a Venturi tube, the exhaust tube 23 is of uniform diameter throughout its length and the outlet openings 24 in the wall of the eye cup open directly into this tube. The outlet openings are shown as slightly raised domes with the openings at their apexes, although this is not essential. The ends of the tubes 23, like those of the Venturi tubes, are shown as oppositely bevelled. The advantage derived thereby is the fact that air will be deflected through the tube and thus induce a draft through the outlet openings both when the goggles are moved forward and backward through the air, i. e., when the wearer is facing the direction of travel or has his back thereto. For the latter purpose it is better to have the tube of uniform size as shown in the construction of Figs. 15, 16 and 18.

The hinging construction will now be described, reference being had first to the form shown in Figs. 1, 2 and 5 to 9, inclusive. The legs of the bridge 1 serve as the hinge pins. At the nasal end, the eye cup 2 has its wall depressed to form a semi-cylindrical concavity 25. Across the face of this concavity there is inserted near its upper end a strip 26 which is soldered or otherwise secured in place flush with the wall of the eye cup and forms a socket for the leg of the bridge. The lower end of the leg is reduced in diameter so as to provide a shoulder which rests upon the top edge of the inserted strip 26 and serves as a stop to limit the axially inward movement of the leg. The lens-retaining rim 4 has at its inner edge an integral extension which is bent to circular form in cross section and forms a knuckle 27 which surrounds the lower end of the leg of the bridge as a pintle and fits in the semi-cylindrical recess 25 below the inserted strip 26. An enlargement 28, which may be a drop of solder, is provided on the end of the leg of the bridge just below the recess 25 and the knuckle 27 and serves as a stop to hold the leg against outward movement. In this way the outer face of the joint is made substantially flush and protuberances to injure the face of the wearer are avoided.

To hold the leg of the bridge properly alined in its socket, an upper bearing above the socket is provided for the leg of the bridge. In the illustrated construction a brace 29 is employed for this purpose. This brace is pinned or otherwise secured at its outer end to the top of the eye cup and its inner end is provided with a hole which surrounds the leg of the bridge and serves as a bearing for it.

In the form shown in Fig. 21, this construction is modified in that the brace 29*a* is integral with the exhaust tube 23*a*, this unitary construction having certain obvious advantages.

A further modification of hinge is shown in Figs. 15 to 22, inclusive, with respect to the brace and the limiting stop construction for the outward movement of the leg of the bridge which serves as a hinge pin. In this construction the brace 29 is shown with its inner end 30 cupped on its under side and provided with a radial slot 31, and the leg 1*a* of the bridge is provided with a lug 32 on its side shaped to pass through the slot 31 and positioned to bear against the under side of the cup 30 when the shoulder of the leg engages the top edge of the inserted strip. The lug 32 is so angularly disposed on the leg that it is out of register with the slots 31 when the parts are in their relative positions which they occupy when the goggles are being used. This will appear clearly from Fig. 17 in which the relative positions of the bridge and eye cup when in use are shown in full lines, and the angular position of the bridge when the lug 32 registers with the slot 31 is indicated by dotted lines. With this construction the parts may be readily assembled and disassembled, and they are securely held together when in condition for use.

The hinge construction of Figs. 23 to 27, inclusive, is particularly for use where there is no hinged lens-retaining rim, as where the eye cup is made to open up at some point, usually at its outer end, to receive or release the lens which is held in a circumferential groove or recess about the front edge of the eye cup. In this case the eye cup has a hole formed near its top at the nasal end to receive the leg 1*b* of the bridge and on the inner face of the eye cup is secured a socket or bearing member 33 for the leg 1*b* in line with the hole in the eye cup. The socket member in the construction illustrated is formed from a sheet metal blank 33*a* shown in Fig. 27. This blank has ears 33*b* which protrude through slots in the wall of the eye cup and are clinched down against the outer face to secure the socket member to the eye cup. It will be understood that this mode of forming the socket and attaching it is merely illustrative. The important thing is that the pintle and its socket are concealed instead of being on the outside to bother the wearer.

The lug 32 coacts with a slot in the brace 34 to lock the bridge and frame members together when in functional position while permitting easy assembly and disassembly by merely turning to another relative angular position. The brace 34 differs from the brace of Fig. 19 in that it is not cupped on its under side, such cupping being optional. As a limiting stop for inward movement of the leg 1*b* a collar 35 is provided.

It is obvious that various modifications may be made in the constructions shown in the drawings and above particularly described within the principle and scope of my invention.

I claim:

1. A frame member for goggles having in its wall a plurality of circumferentially disposed ventilating openings, an external deflector covering the openings, and a slide between the deflector and eye cup wall operative to regulate the area of the ventilating openings.

2. A frame member for goggles having in its wall a plurality of circumferentially disposed ventilating openings, an arched covering over the openings having its ends closed and provided with a longitudinal series of openings, and a slide inside the covering with an operating part external thereof and operative to regulate the area of the ventilating openings.

3. Goggles comprising a pair of frame members each having a circumferential series of ventilating openings along its bottom and a slide regulating the area of the openings, each slide being provided with a finger piece to actuate the same and the slides operating in respectively

opposite directions to enlarge and restrict the openings.

4. A goggle frame comprising an eye cup having a bearing socket for a leg of the bridge disposed within the wall of the eye cup, and an opening through the wall for the admission of the leg communicating with the upper end of the socket.

5. A goggle frame comprising an eye cup having a cylindrical bearing for a leg of the bridge disposed wholly within the wall of the eye cup at the nasal end and having an opening through the wall communicating with the bearing, a bridge member having a leg passing through said opening and bearing in said socket, and locking means for the leg holding it against axial movement while permitting rotative movement with respect to the bearing.

6. A goggle frame comprising an eye cup having at its nasal end a bearing for a leg of the bridge, a bridge having a leg pivotally disposed in said bearing, and means including a slot in one member and a projection on the other arranged to permit the parts to be assembled and disassembled only when they are in one relative angular position.

7. A goggle frame comprising an eye cup having a cylindrical bearing for a leg of the bridge disposed wholly within the wall of the eye cup at the nasal end and having an opening through the wall communicating with the bearing, a bridge member having a leg passing through said opening and bearing in said socket, and a brace for the bridge attached to the eye cup and having a bearing opening for the leg, said opening in the brace and the leg having such relative cross-sectional shape that the leg can pass through the opening only when the leg is in one relative angular position.

8. A goggle frame comprising an eye cup having a cylindrical bearing for a leg of the bridge disposed wholly within the wall of the eye cup at the nasal end and having an opening through the wall communicating with the bearing, a bridge member having a leg passing through said opening and bearing in said socket, a brace for the bridge attached to the eye cup and having a bearing opening for the leg with a radial slot communicating therewith, and a lug on the leg of the bridge designed to pass through the slot only when the leg is in an angular position other than its position when the goggle frame is in use and to cooperate with the brace to lock the leg in the bearing when the lug is out of register with the slot.

9. A goggle frame comprising an eye cup having its wall circumferentially depressed at its nasal end to form a semi-cylindrical recess, a strip inserted across the front of the recess above its lower end and secured flush with the face of the cup to form with the depressed wall a pivotal socket, a bridge having a leg pivotally disposed in said socket, and a lens-retaining rim fitting over the front edge of the cup and having a knuckle received in the lower part of the recess and hinging upon the leg of the bridge below said inserted strip.

10. A goggle frame comprising an eye cup having its wall circumferentially depressed at its nasal end to form a semi-cylindrical recess, a strip inserted across the front of the recess above its lower end and secured flush with the face of the cup to form with the depressed wall a pivotal socket, a bridge having a leg pivotally disposed in said socket and having a shoulder bearing upon the top of the inserted strip and forming an inward limiting stop, a lens-retaining rim fitting over the front edge of the cup and having a knuckle received in the lower part of the recess and hinging upon the leg of the bridge below said inserted strip, a brace for the bridge secured at one end to the top of the eye cup and providing a pivotal bearing for the leg near its upper end, and means on the leg cooperative with its bearing to form an outward stop.

11. A goggle frame comprising an eye cup having a pivotal socket at its nasal end, a bridge having a leg pivotally bearing in said socket and provided with a stop member, and a brace for the bridge attached to the eye cup and having a bearing portion for the leg of the bridge shaped to permit the stop member to pass through in one relative angular position of the leg and to bar the stop member from passing in other angular positions of the leg.

12. A goggle frame comprising an eye cup having its wall circumferentially depressed at its nasal end to form a semi-cylindrical recess, a strip inserted across the front of the recess above its lower end and secured flush with the face of the cup to form with the depressed wall a pivotal socket, a bridge having a leg pivotally disposed in said socket and provided with a shoulder engageable with the inserted strip to limit the inward movement of the leg and having a stop lug above said shoulder, and a brace for the bridge attached to the eye cup and having a circular opening providing a bearing for the leg of the bridge and a radial slot from the bearing shaped to admit the stop lug on the leg only when the leg is in one relative angular position.

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