July 21, 1964 J. B. HIRSCHMANN 3,141,172

VENTILATED GOGGLES

Filed Sept. 18, 1961

FIG-1

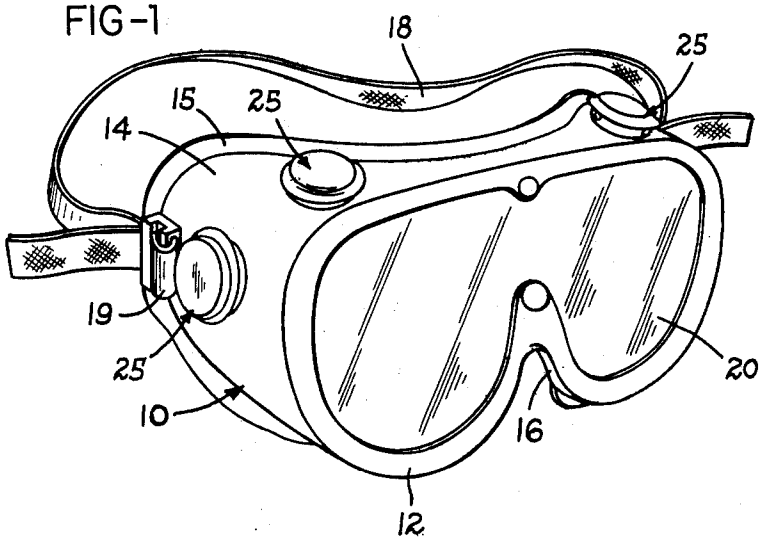


FIG-2

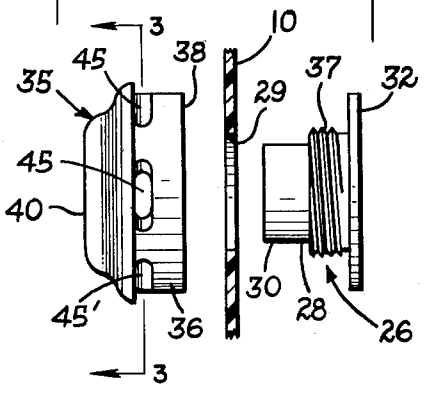


FIG-3

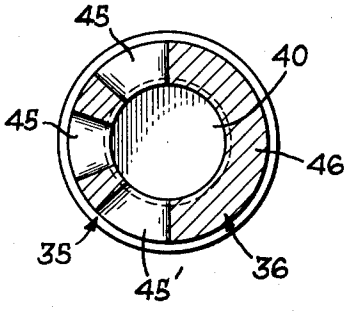
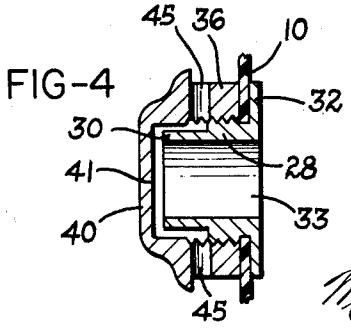


FIG-4



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VENTILATED GOGGLES

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This invention relates to goggles and more particularly to ventilated goggles for protection against the exposure of the eyes to harmful and/or undesired liquids and the like.

The invention provides a versatile protective ventilated goggle which has ventilators arranged to resist the intrusion of liquids or other foreign matter accidentally sprayed, spilled, or otherwise impinged against the goggles. The ventilators in the goggles further provide for the removal by draining of any liquids which may have entered through the outer air openings as a further prevention of the entry of such foreign matter into the interior of the goggles.

It is therefore an object of this invention to provide a ventilated safety goggle especially constructed to protect the eyes and surrounding areas against the intrusion of foreign matter, particularly liquids, while at the same time also offering effective protection against flying chips and particles.

Another object of this invention is to provide safety goggles having ventilators wherein a cap which forms the ventilating opening has a blind side which is positionable toward the direction of expected intrusion.

A further object of this invention is to provide a ventilated safety goggle having a cap with at least one ventilating opening facing generally downwardly and forming a drain opening for the gravitational removal of any liquid which enters the cap.

A still further object of this invention is the provision of a safety goggle having ventilators with extending tube portions forming a circuitous path resisting the intrusion of liquids into the interior of the goggles.

Other objects and advantages of the invention will be apparent from the following description, the accompanying drawing and the appended claims.

In the drawing—

FIG. 1 is a perspective view of a ventilated goggle constructed in accordance with this invention;

FIG. 2 is an exploded view of the component parts of one of the ventilators in the goggle of FIG. 1;

FIG. 3 is a section through the cap of FIG. 2 taken generally along the line 3—3 of FIG. 2; and

FIG. 4 is a transverse section through one of the ventilators shown as being secured to the frame member of the goggles.

Referring to the drawing, which illustrates a preferred embodiment of this invention, a pair of ventilated safety goggles is shown as including a frame **10** which may be constructed of relatively soft impervious plastic material such as disclosed in my Patent No. 2,773,260. The goggle frame **10** includes a rim portion **12** and a back portion or wall **14** which extends rearwardly from the rim and terminates in a flange **15** for engaging the face of the wearer, and a nose pad **16** is molded integrally with the rim. A head strap **18** is shown as connected to the goggles by means of loops **19** provided near the back edge of the frame **10** at opposite sides of the goggles. The front rim portion **12** includes a lens **20** which is substantially complementary to the shape of the rim and which may be removably received therein in the manner disclosed in the above patent.

The goggle frame **10** preferably includes a plurality of ventilators **25** positioned at opposite sides of the frame **10**, with a pair of the ventilators **25** positioned at the top of the frame and another pair of the ventilators **25** positioned at the sides of the frame.

The ventilators **25** are preferably identical in construction, and reference may be had to FIGS. 2–4 for a detailed description of one thereof. Each ventilator **25** preferably includes a separate base member **26** which may be conveniently molded of plastic material, although other materials such as metal may be used. The base member **26** includes a tube portion **28** for insertion through a suitably prepared opening **29** formed in the frame **10**. The tube portion **28** is adapted for insertion through the opening **29** with an end **30** extending outwardly from the frame. The base member **26** preferably further includes an integral annular flange **32** formed on the inside end of the tube portion **28** and arranged for sealing engagement with the adjacent inside surface of the wall **10**. The base member therefore forms a ventilating opening **33** (FIG. 4) formed axially thereof.

The ventilator **25** also includes a generally cup-shaped cap **35** preferably formed from the same material as the base member **26** and having a cylindrical body portion **36**. The cylindrical body portion **36** of the cap **35** is arranged to be assembled on the goggles in telescoping relation with the tube portion **28**. The member **26** and the cap **35** may be secured together by means of threads **37** formed on the tube portion **28**. However, it is within the scope of this invention to join these parts with a press fit or by a solvent seal, or any other convenient means of attachment. When so attached, the cylindrical body portion **36** of the cap **35** includes a terminal end **38** which forms an outer flange in sealing abutment with the adjacent outer surface of the wall **10** in opposed relation to the inner flange **32**.

The cap **35** further includes an integral closed outer portion or end **40**, as shown in FIG. 4, which defines a ventilating space **41** between the end **40** and the outer end **30** of the tube portion **28**. The cylindrical portion **36** of the cap **35** further includes means defining at least one, but preferably a plurality of, ventilating apertures **45** formed to lie inwardly of the end **30** and opening into the ventilating space **41**. The apertures **45** extend radially through the cylindrical portion **36** at a location spaced between the outer end **30** of the tube portion **28** and the sidewall **10**, thus providing a circuitous path leading from outside the goggles to the axial opening **33**.

The cap **35** is preferably formed with the apertures **45** on one side only, thereby providing a blind side **46** which may be positioned toward the direction of expected intrusion of the foreign matter. Preferably, the ventilator **25** is arranged on the goggles **10** with the cap **35** angularly positionable or movable by the wearer to place the blind side **46** toward the direction of expected intrusion according to the particular use of the goggles. The arrangement of three apertures covering approximately 180° of the cap provides good ventilation and, at the same time, permits one of the apertures, designated as **45'** in FIG. 4, to open downwardly for the drain-out of any liquid which may have accidentally entered the ventilator.

In use, it is desirable that the wearer determine the direction in which the spray, flooding, or other intrusion is to be expected, and then to rotate the cap **35** to position the blind side **46** accordingly. It is preferable that consideration be given to the placement of an aperture **45'** to face downwardly for the gravitational drain-out of any liquid which may accidentally enter the cap **35**. It is therefore seen that air or foreign matter such as liquid or particles is caused to follow a circuitous path entering through the apertures **45** and/or **45'** and making a 90° turn to arrive at the space **41** and then making a further turn of approximately 180° to enter the interior of the goggles through the axial opening **33**. This has the advantage of causing particles which are heavier than

air to impinge against the outer surface of the tube portion **28** and again against the inside surface of the end **40**, thereby substantially decreasing the velocity of such foreign matter so that it may fall or drain downwardly through the opening **45'**. Also, the arrangement of the end **30** outwardly of the opening **45** and **45'** operates in the manner of a stand-pipe or a breather pipe, particularly for the ventilators located adjacent the top of the goggles, thus further resisting the intrusion of liquid.

It is therefore seen that this invention provides versatile safety goggles with ventilators which give superior protection of the eyes against the intrusion of foreign matter. It is also recognized that these ventilators form efficient light traps and are therefore ideally suited for use in combination with goggles wherein the light is intended to be excluded, such as welding goggles and the like.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is understood that the invention is not limited to this precise form of apparatus. As an example, the tubular portion **30** may be formed or otherwise suitably carried on the cap **35** and proportioned to extend into the opening **29**. Also, the flange **32** may be formed as a separate piece which is solvent soldered to the portion **30** at the frame **10** after assembly. Thus, it is seen that these and other changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. In a safety goggle having a frame including an impervious wall, a safety ventilator providing for ventilation while protecting the wearer against accidental intrusion of harmful liquids into the interior of the goggle, comprising a hollow tubular portion extending axially through an opeing in the goggle wall and terminating at one end interiorly of the goggle and at an outer end exteriorly of the wall with said outer end being positioned in spaced relation from the wall, means forming a pair of axially spaced inner and outer annular flange portions on said ventilator one of which is received on each side of the goggle wall at said opening to support said

tubular portion directly on the goggle wall in sealing relation with the wall, means on said ventilator forming a generally cup-shaped cap having an impervious outer end and axially inwardly extending sides overlapping the outer end of said tubular portion with the inner surfaces of said cap being proportioned respectively in spaced relation to the sides and outer end of said tubular portion, and means in said cap sides defining at least one combined drain and ventilating opening therethrough positioned adjacent said outer flange and axially inwardly of the radial projection of said outer end of said tubular portion for the air passage through said tubular portion into the interior of the goggle and providing for the drainage of liquids outwardly from within said cap.

2. The ventilator defined in claim 1 wherein approximately a substantially angular portion of one side of said cap is impervious to the flow of liquid therethrough and is positionable by turning said ventilator in said goggle wall opening toward the direction of expected liquid intrusion.

3. The ventilator defined in claim 1 wherein said cap is initially a separate member from said tubular portion, said outer flange is a portion of said cap, and said cap and said tubular portion include cooperating portions securing the same together with said flanges in sealing relation with the goggle wall.

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