

Feb. 13, 1968

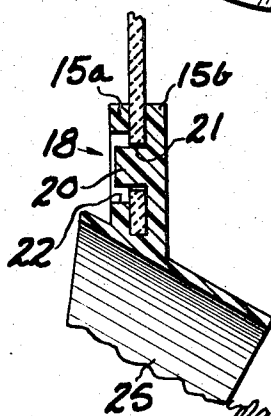
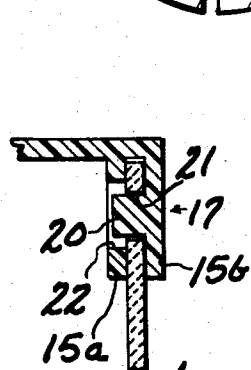
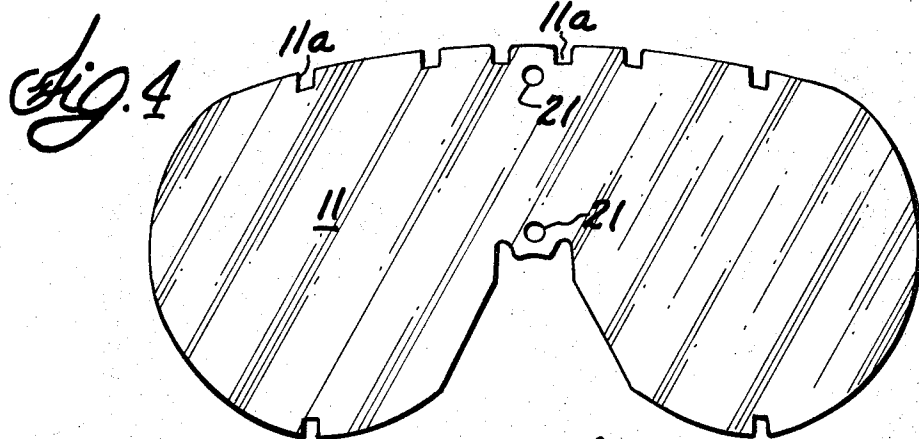
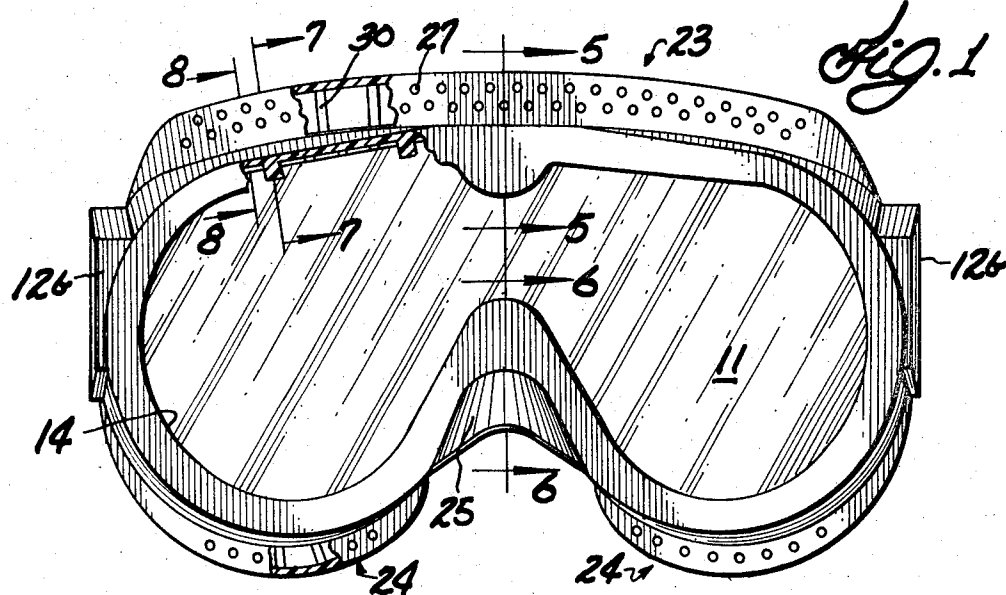
M. N. ANDERSON

3,368,221

EYE-PROTECTING DEVICE

Filed April 1, 1966

2 Sheets-Sheet 1



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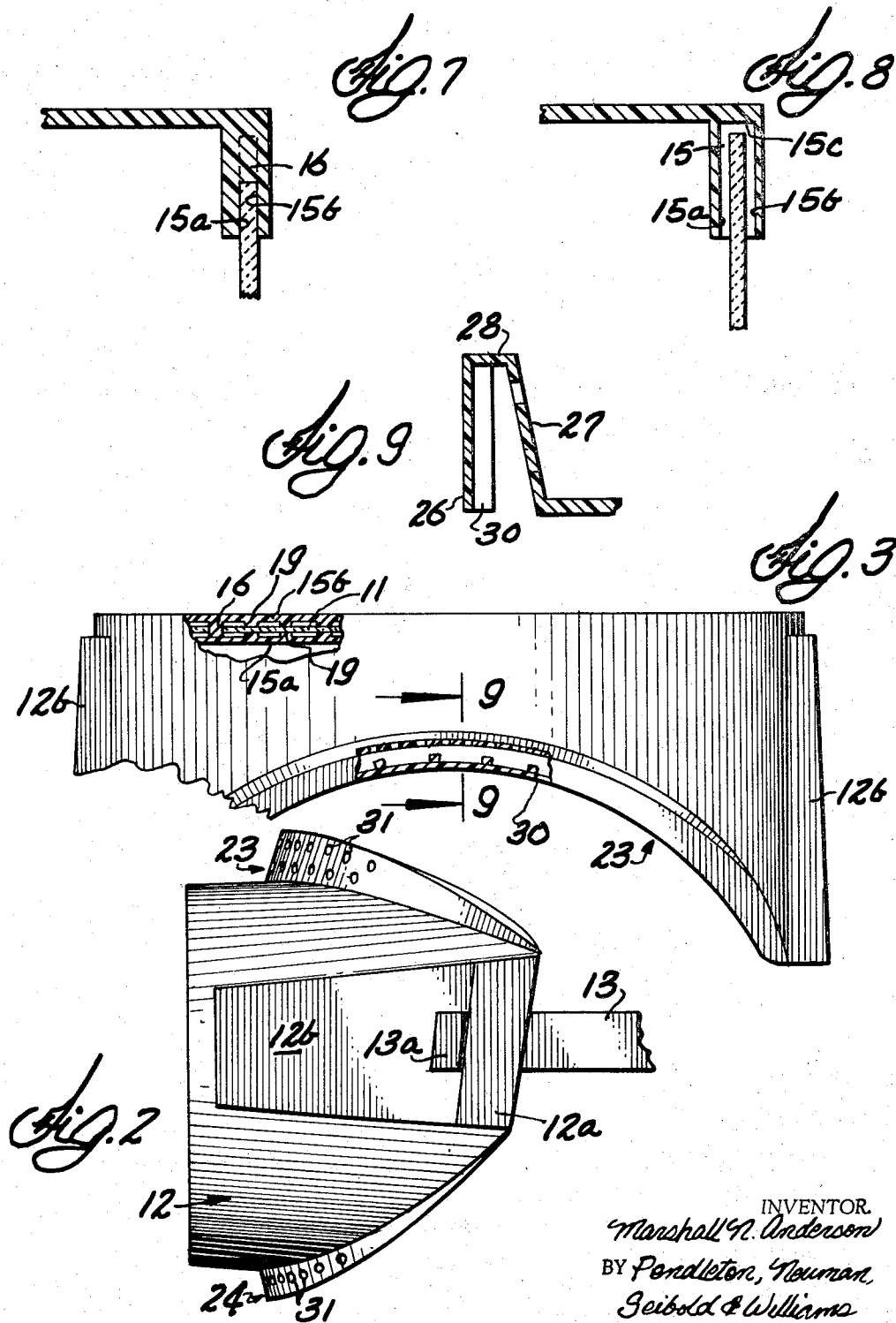
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2 Sheets-Sheet 2



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EYE-PROTECTING DEVICE

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ABSTRACT OF THE DISCLOSURE

An eye-protecting device utilizing a holder at the forward end of which there is provided lens holding means for removably accommodating and retaining a lens piece in spaced relation with respect to the face of the wearer. The lens holding means cooperates with the periphery of said lens piece to form a plurality of spaced ventilating passages which circumvent the periphery of the accommodated lens and permit ventilation of the space formed between the lens and the face of the wearer. The inner portion of the holder is provided with a face-engaging peripheral portion which includes an outer segment extending laterally outwardly from the holder, and an inner segment which is connected to the upper edge of the outer segment and extends resiliently laterally inwardly therefrom. The inner segment is of pliable material and is capable of conforming substantially to the facial configuration of the wearer. Stop means is provided between the inner and outer segments so as to limit the extent to which the inner segment may move or flex towards the outer segment. The outer segment may be perforated and communicate with the space between the lens and the face of the wearer and permit further ventilation therefor.

Various devices of this general type have heretofore been used; however, because of certain design characteristics they are beset with numerous shortcomings. For example, such devices are uncomfortable to wear as they do not readily conform to the wearer's facial contour. Furthermore, fogging of the interior surface of the lens of the prior devices frequently occurs causing impairment of sight through the device. Oftentimes, replacement of a lens in a prior device is an awkward and time-consuming operation.

Thus, it is one of the objects of this invention to provide an improved device which is not beset with the aforementioned shortcomings of the prior structures.

It is a further object of this invention to provide an improved device which is attractive in appearance, of light weight, yet sturdy, construction, and inexpensive to produce.

It is a still further object of this invention to provide an improved device which is versatile and can readily be worn by adults and children of both sexes.

It is a still further object of this invention to provide an improved device which provides maximum protection for the eyes against glare, dust, and other foreign particles.

Further and additional objects will appear from the description, accompanying drawings, and appended claims.

In accordance with one embodiment, a device is provided which comprises a lens, a holder therefor, and means for securing the device on the face of the wearer.

The holder includes a forwardly disposed lens opening

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delimited by a channel-shaped pocket for removably accommodating the lens periphery. Disposed rearwardly of the lens opening is a peripheral portion which is adapted to resiliently engage a facial portion of the wearer. The holder peripheral portion includes a soft yieldable inner segment and an outer segment connected thereto; said segments normally assuming spaced relation with respect to one another. One of the segments carries stop means which limit the extent to which the inner segment can be moved toward the outer segment when contact is made between the face of the wearer and the inner segment.

For a more complete understanding of this invention reference should be made to the drawings wherein:

FIG. 1 is a front view of one form of the improved device and having portions thereof cut away.

FIG. 2 is a right side elevational view of FIG. 1.

FIG. 3 is a fragmentary top plan view of FIG. 1 with portions thereof cut away.

FIG. 4 is a front elevational view of the lens alone.

FIG. 5 is a sectional view taken along line 5—5 of FIG. 1.

FIG. 6 is a sectional view taken along line 6—6 of FIG. 1.

FIG. 7 is a sectional view taken along line 7—7 of FIG. 1.

FIG. 8 is similar to FIG. 7 but taken along line 8—8 of FIG. 1.

FIG. 9 is an enlarged sectional view taken along line 9—9 of FIG. 3.

Referring now to the drawings, the improved device is illustrated in the form of an industrial goggle 10. It is to be understood of course that the invention is not limited to the illustrated embodiment but may take the form of a goggle utilized by skiers or others engaged in sport activities requiring eye protection. By the term industrial goggle it is intended to cover persons engaged, for example, in grinding, sanding and chipping or in actively involving chemical splash whereby protection of the eyes is an important consideration.

The device 10 includes a lens 11, a lens holder 12, and securing means 13 for retaining the device on the face of the wearer. Means 13, as seen in FIG. 2, is in the form of an elastic band, the ends 13a of which are attached to side portions 12a of the holder.

The holder 12 is preferably of one piece molded construction and is formed of a soft vinyl or similar plastic material which may be transparent and tinted so as to reduce glare, or may be translucent or opaque depending upon the activity of the wearer and the use for which the device is intended.

A lens opening 14 is formed in the forward or front portion of the holder. In the illustrated embodiment only a single lens opening is provided; however, if desired, two openings may be provided, one for each eye, which are separated by a nose bridging or connecting section.

The circumferential portion of opening 14 is in the form of a channel-shaped pocket 15, which is adapted to resiliently accommodate the periphery of lens 11. Pocket 15, as seen more clearly in FIGS. 7 and 8 includes an inner flange 15a, an outer flange 15b, and a base section 15c which serves to interconnect corresponding portions of flanges 15a and b. The base section 15c at predetermined locations is provided with a plurality of lugs 16, only one being shown in FIG. 7. The location of the lugs in the pocket corresponds to the location of the notches

11a formed in the periphery of the lens, see FIG. 4. Once the lugs 16 are disposed within the respective notches 11a, the lens 11 is restrained from shifting with the pocket 15.

In FIG. 8 it will be noted at spaced intervals about the lens periphery that the flanges 15a and b and base 15c are all spaced from the lens periphery and thus, permit ventilation along the interior surface of the lens. Spacing between flanges 15a and b and the lens 11 is effected by a plurality of relatively spaced spacers 19, see FIG. 3. By reason of such ventilation, fogging of the lens interior surface is avoided. With prior devices, fogging of the lens interior surface was particularly acute because of the lack of ventilation.

Because of the tortuous configuration and the size of the ventilating passageways disposed about the lens periphery, dust particles and even liquid caused by splashing, are not likely to find their way into the space formed between the eyes of the wearer and the interior surface of the lens.

In the area of the nose bridging portion of the device, there are provided upper and lower locking buttons 17 and 18, see FIGS. 5 and 6, respectively. Both locking buttons are of like construction, and include a protuberance or pintle 20 which is carried by one of the pocket-forming flanges 15a or b and extends transversely of the pocket through a suitable opening 21 formed in the lens 11, see FIG. 4. The distal end of the pintle 20 is positioned within a suitable opening or cavity 22 formed in the other pocket-forming flange. The pintle 20 is adapted to normally assume a locking position as shown in FIGS. 5 and 6. Because of the inherent resilient character of the material of which the holder is molded, the pintle can be readily moved to an unlocking position by merely bending the pintle-carrying flange (flange 15b in the illustrated embodiment) away from the other flange until the distal end of the pintle is free of the lens opening 21. The locking buttons 17 and 18 combine with the pocket lugs 16 so as to effectively secure the lens in proper position within the holder.

Disposed rearwardly of the lens opening 14 are upper and lower facial-contacting portions 23 and 24, respectively. The upper portion 23 has an arcuate shape which conforms generally to the forehead configuration of the wearer. The lower portion 24 likewise is arcuate in shape, but is in two sections which are separated by a saddle 25, the latter resting upon the nose of the wearer.

Both the upper and lower portions 23 and 24 are substantially of the same construction and each includes a yieldable inner segment 26, an outer segment 27, and a connecting segment 28, see FIG. 9. Segments 26 and 27 are adapted to normally assume a spaced apart relation as shown. When the device is worn, however, the inner segment 26 will contact the face of the wearer and, because of the yieldable or pliable character of the segment, the latter will move toward the outer segment 27 and conform to the facial configuration. To prevent segment 26 assuming a face-to-face contact with segment 27, a plurality of stop elements 30 are formed on one of the segments and are disposed between the two segments 26 and 27. The elements 30 serve to retain the segments in a minimum spaced apart position.

The outer segment 27, may, if desired, be provided with a plurality of perforations 31. By reason of the stop elements 30 preventing segments 26 and 27 engaging one another in face-to-face contact, the perforations 31 will always be in communication with the space formed between the eyes of the wearer and the lens and thus, provide ventilation for such space.

Where the device is being worn by one engaged in an activity involving splashing of a liquid, the perforations 31 may be omitted entirely. In any case, the perforations 31 are very small and thus, prevent most, if not all, dust or foreign particles from finding their way into the device interior. Perforations 31 provide a cooling ventilating

effect, and thus, add materially to the comfort of the wearer.

The rearward disposition of portions 23 and 24 with respect to the lens 11 and the rearward extent of the sides 12a are such as to provide adequate space for accommodating eyeglasses of the wearer if the latter is wearing same. Likewise the sides 12a of the holder are each provided with an outwardly projecting hollow portion 12b, which is adopted to accommodate one of the rearwardly extending temples, not shown, of the wearer's eye-glasses.

Because of the yieldable character of the material from which the holder is formed, the sides 12a and rear portions 23 and 24 of the holder are capable of bending so as to conform accurately to the shape of the wearer's face and head. Thus, the device may be worn by young and old alike regardless of sex. The length of the band 13 may be readily varied as desired in a manner well known in the art, so to provide maximum comfort for the wearer.

The lens 11 is readily replaceable, when required, and for this reason therefore the versatility of the device is greatly enhanced. For example, when a grinding operation is involved, a clear or slightly tinted lens might be used; whereas, when the device is used during a welding operation, the lens would be a smoked or heavily tinted type. In either case the lens would be formed of either safety glass or plastic material.

Thus, it will be seen that a protective device has been provided which is extremely comfortable to wear either with or without eye-glasses, is attractive and of sturdy construction, is inexpensive to produce, and provides effective protection for the eyes of the wearer.

While several embodiments of this invention have been described above, further modifications may be made thereto and it is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. An eye-protecting device comprising a lens, a holder therefor, and means for securing the holder on the head of a wearer; said holder including a peripheral portion spaced from said lens for resiliently engaging the face of a wearer, said peripheral portion being substantially U-shaped in vertical cross-section and having an outwardly and laterally extending outer segment and a yieldable inner segment connected to the outer marginal portion of said outer segment and extending resiliently inwardly therefrom and in spaced relation with the remainder of said outer segment, said inner segment is pliable and conforms substantially to the facial contour of the wearer, said outer segment is perforated and said perforations communicate with and effect ventilation of the space between said lens and the eyes of the wearer when the device is being worn, and stop means carried by one of said segments for limiting the extent to which said inner segment can be moved toward said outer segment when in contact with the face of the wearer.

2. The eye-protecting device of claim 1 wherein said holder includes a forwardly disposed lens opening defined by a substantially channel-shaped pocket, disposed within said pocket are a plurality of spaced lugs which engage suitable notches formed in the lens periphery and effect locking of the lens within said pocket, said lens periphery being resiliently accommodated within said pocket, portions of said pocket intermediate said lugs being spaced from said lens periphery to form ventilating passages which circumvent portions of said lens periphery.

3. The eye-protecting device of claim 2 wherein each of said ventilating passages are of tortuous configuration.

4. The eye-protecting device of claim 2 wherein said channel-shaped pocket includes a nose-bridging section.

5. The eye-protecting device of claim 1 wherein said holder includes a plurality of face-engaging peripheral

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portions, the inner segment of one peripheral portion being adapted to engage the forehead of a wearer, and the inner segment of a second peripheral portion being adapted to engage a facial portion of below the wearer's eye.

6. The eye-protecting device of claim 5 wherein the holder is of one piece construction and is molded from a soft pliable material and said holder peripheral portions cooperating to effect substantial envelopment of the wearer's upper facial eye region.

7. The eye-protecting device of claim 4 wherein said lens includes a nose-bridging portion.

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