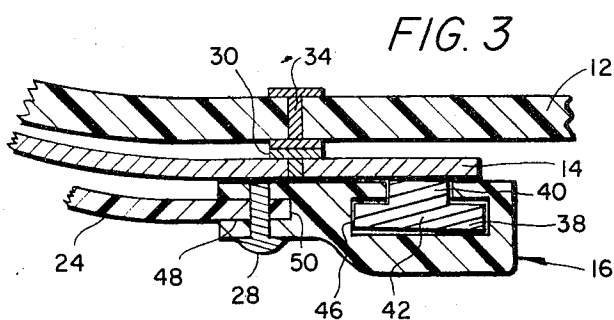
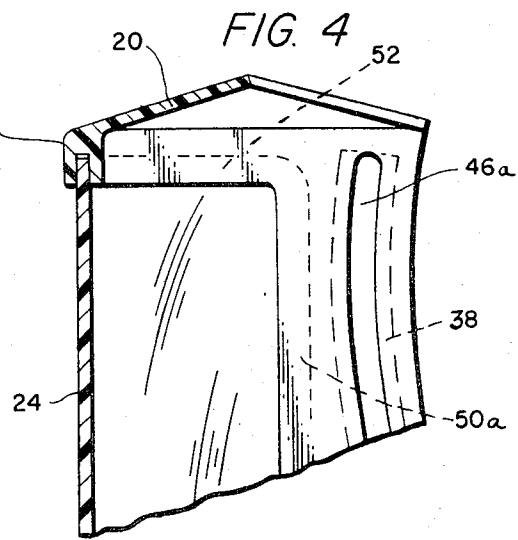
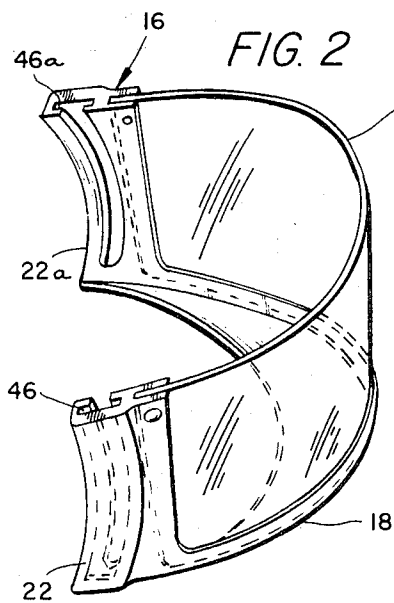
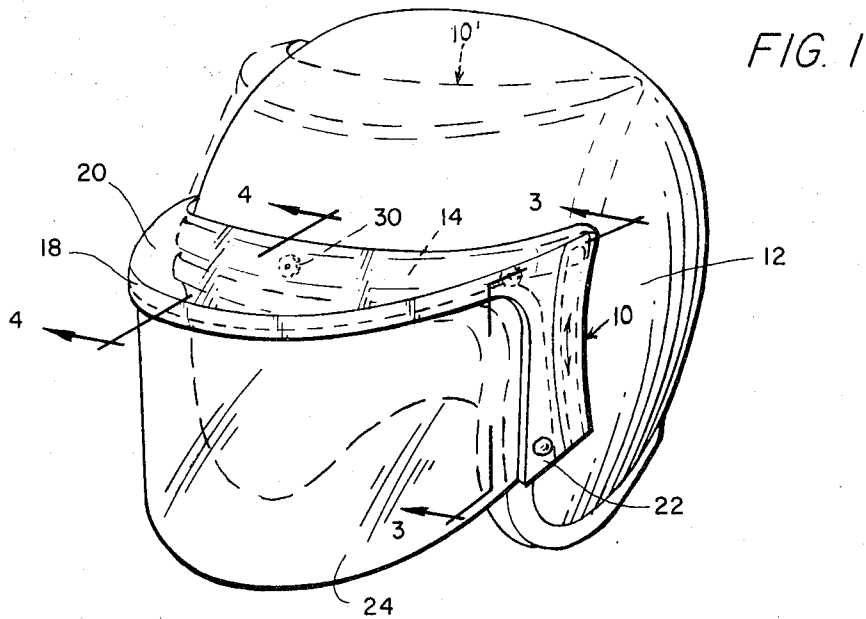




INVENTOR
NICK KOTZAR

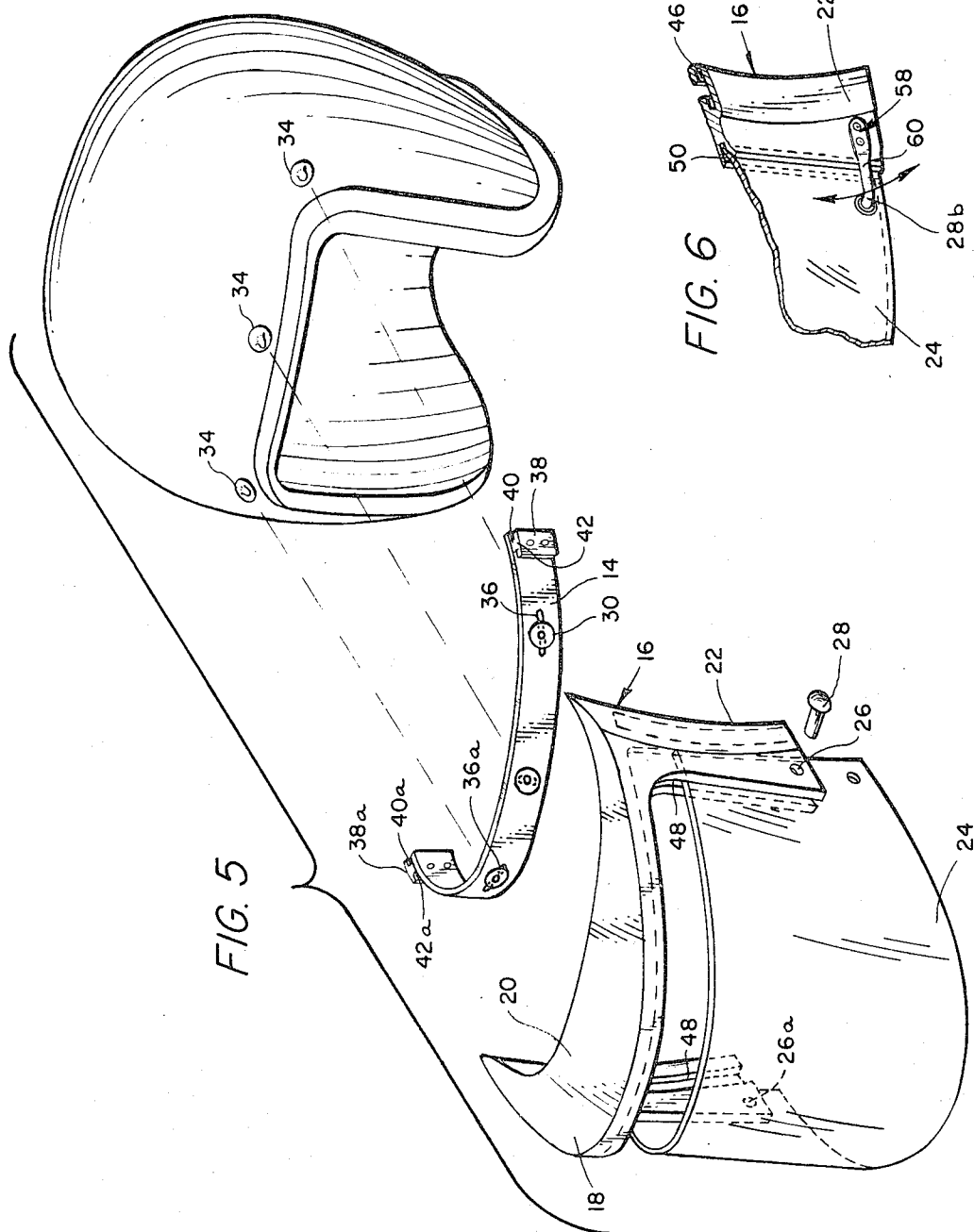


FIG. 6

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VISOR ASSEMBLY HAVING REPLACEABLE FACE SHIELD

BACKGROUND OF THE INVENTION

This invention relates to face protective assemblies for attachment to headgear structures and particularly to a visor assembly having a replaceable face shielding material therein for attachment to a protective helmet.

Visor and face shield assemblies for helmets have heretofore included face shields that could be detached from supporting structures such as helmets, and have had face shield elements therein that could by various means be replaced. Face protective assemblies to be supported on the head have also used transparent insertable shields that are positioned over the face. In particular such constructions are shown in the following U.S. patents: No. 2,169,745 to Shipman; No. 2,194,492 to Bowers; No. 2,421,427 to Mamlin et al; No. 3,189,918 to Hiatt et al; and No. 3,214,767 to Weber.

In the case of visors that may be used under a variety of different light conditions or that may become scarred or damaged, it is desirable that the user be able quickly to remove and replace or change the face shielding material or element. Prior visors however have not solved the problem of providing easy interchangeability in an economical face shield curving around the face to the satisfaction of users. Nor have the prior assemblies provided an economical face shield, particularly curving around the face, that can be interchangeably held securely and in a rigid manner in the visor in a way that at once minimizes obstruction to vision and distortion of visual images received there-through and provides a solid edge support about the sides and top of the replaceable face shield element.

SUMMARY OF THE INVENTION

The present invention provides a visor assembly wherein a protective face shield can be removably assembled in a visor frame, adapted for detachable installation on a protective headgear so as to be positioned in a curve around the face while the face shield is securely held in the visor to produce optimum viewing conditions and allow quick, easy removal and insertion of a face shielding element into and from the frame. It has been found that a face shield can be adjustably held or secured in the proper curvature around the face by positioning it in a frame or visor-like structure adapted to be mounted for sliding movement on a helmet so the face shielding element is engaged in the frame only along the lengths of its sides and top edges.

Accordingly, this invention also contemplates a slidably adjustable visor assembly for protecting the face of a wearer by attachment to a helmet, the assembly incorporating a frame means such as an inverted "U" shaped frame engaging only along the side and top edges of a face shield element, with the lower edge of the face shield element left free and unobstructed, and an attaching band means that is mountable to a helmet operatively connected to the frame means to provide for the sliding of the visor assembly relative to the helmet so that the visor assembly is variably positionable on the helmet.

Advantageously, the frame means includes a frontal horizontal crosspiece which may incorporate a peak or sun shield engaging the upper edge of the shield and shield bracing members of substantial length extending

downward therefrom in positions to be at sides of a helmet or head covering device so as to engage a substantial edge length of a respective side edge of the shielding element so as to hold and brace it in the assembly. Provision may be made in the frame means, for slide track means located in the shield bracing members at the sides for connection thereto of attachment means adapted to secure the visor assembly to a helmet and provide for smooth operative adjustment of the position of the assembly on a helmet between over-the-face and off-the-face positions of use while securely attached to the helmet.

For positioning the face shielding element in the frame means, the frame means is advantageously provided with means to position the shielding element quickly and securely therein and which may be in the form of one or more channels or positioning grooves adapted to receive the top and side margins or edges of the face shielding element. The positioning means may beneficially form a continuous groove having a substantial length on each side of the assembly for guiding the movement of the face shielding element into position therein and holding it firmly in place. On insertion of the shielding element into the frame means, it advantageously may be retained in place by easily removable and reinsertable friction retention pins inserted through the shield and frame or by wedging the shielding element for tight fit in the frame means so it is clamped in the positioning grooves. Advantageously, the face shielding element may be formed from a thin, flexible, transparent plastic which may be tinted or untinted and the edge of the element securely held in positioning grooves in the frame so as to form a lightweight firm assembly wherein the face shielding element may be changed in a quick and easy manner as desired.

BRIEF DESCRIPTION OF THE DRAWINGS

The above set forth and further objects and advantages of the invention will be more apparent from the following description and drawings of preferred embodiments in which:

FIG. 1 is a perspective view of a visor assembly of this invention showing it mounted in place on a protective helmet using an attachment band;

FIG. 2 is a perspective side view of the visor assembly removed from the helmet and inverted;

FIG. 3 is a view in section of a portion of the visor assembly of FIG. 1 taken along the line 3—3 thereof;

FIG. 4 is an elevational view in section taken along line 4—4 of FIG. 1, showing the face shield fitted into the groove in the visor frame;

FIG. 5 is a perspective view similar to FIG. 1 with the parts exploded for clarity and showing the face shield element partially assembled in the visor frame and pin means for holding the face shield element in place; and

FIG. 6 is a partial perspective view of an alternate embodiment of retaining means for holding the face shield in place in the visor assembly.

DESCRIPTION

Referring to the drawings a visor assembly in accordance with the invention is shown at 10 adapted to be removably attached to a protective helmet 12 of the types for example that are worn by motorcyclists, police, or other personnel requiring impact protection for the head. The assembly includes attaching means in the

form of attachment band 14 for securing it to the helmet and an inverted "U" shaped frame member or visor frame means 16 slidably attaching to the band 14. The visor frame 16 includes a horizontal semicircular crosspiece 18 having integrally formed therewith a crescent-shaped peak 20 and extending downward from rear upper ends of the frame left and right side substantially vertical members or leg portions 22 and 22a for holding edge portions of a face shielding element 24. The face shielding element is held releasably secured to the frame member as a part of the visor assembly so as to produce good optical curvature which minimizes distortion of visual images transmitted there-through. The assembly also includes a shield retaining means in the bottom portion of each leg portion 22, 22a. The shield retaining means is a pair of small holes 26, 26a one each defined in the bottom portion of leg portions 22, 22a and one each in the side edge portions of the face shielding element. The holes 26, 26a in the leg portions and the side edge portions are in mating arrangement when the face shielding element is positioned in frame member 16. A pair of easily removable friction pins or retaining studs 28 and 28a that fit through holes 26, 26a in the frame member and the shielding element hold and retain the shielding element rigidly in place (See FIGS. 1 and 5).

The attachment band 14 is a curvilinear narrow strip of stiff material such as plastic or metal having on its inner or concave side the female snap portions 30 of snap type connectors. Portions 30 are adapted to receive mating male snap portions 34 of like connectors affixed to helmet 12 across the area of the forehead. One of the female portions is in fixed position on the band centered between the ends thereof with the other two female portions spaced to either side of the center and attached to the band so as to slide in slots 36 and 36a defined through the band. The band is thus adjustably attachable to a variety of helmets in which the spacing between the connector snap portions may be unequal or varied between helmets.

A pair of sliders 38 and 38a are affixed to the band to protrude out from the convex side thereof at its respective ends for carrying the frame 16. Each slider is an elongated lug having a narrow base 40, 40a, respectively, and a wider flange 42, 42a that provides each slider a pair of oppositely directed front and rear elongated rectangular runners, respectively. In the assembly the sliders are cant or wedge-fitted into a respective slide T-shaped track 46, 46a integrally molded into a respective one of the side braces 22, 22a when the slides are assembled into the tracks, the relative springiness of the band and the visor frame hold the frame to the band in whatever relative position one is moved with respect to the other by sliding of sliders 38, 38a in their tracks 46, 46a (see FIG. 1 and 3). FIG. 1 shows the face shield protective assembly in off-the-face position 10' as indicated by dash lines.

In addition to the tracks the visor frame has a positioning means in the form of a recess, groove or "U"-shaped channel 48 for receiving the top and side edges of the face shielding element 24 along substantially the full lengths of the connected upper and side edges thereof so when assembled in the groove in the frame the shield is properly positioned and continuously braced therein along these three edges leaving the major portion of its lower edge free and unobstructed. When so held the shield is maintained in a uniformly

cylindrical curvature for its full height which minimizes optical distortion of received images when the shield is in use over the face of the wearer. For this purpose the groove is set into the forward directed edges of the side or leg portions forming the braces as a pair of forwardly opening extended length side channel portions 50, 50a at each side of the frame member directed to converge slightly towards the front of the assembly with the groove continuing in a thickened bracing lip that forms the crosspiece 18 across the front of the frame so the side channel portions are connected between the tops of the braces as a downwardly directed recess or top channel portion 52 curving outwardly under the front edge of the peak. It will be apparent that this construction forms the groove 48 as an inverted "U" shaped recess that along its full length provide inner and outer bracing by the side walls of the groove for holding the received edges of the face shielding element and which continue from the lowermost edge of one of the side braces the full side height of the face shield then across the top of the frame and then down in the opposite brace to its lower edge. The groove is configured in the frame to match the generally rectangular configuration of the upper and side edges of the shielding element 24 and is set sufficiently deep into the side legs 22, 22a so the walls of the side channel portions 50, 50a therein provide firm holding of the side edges of the shielding element when it is assembled in the frame.

The alternate embodiment of FIG. 6 shows a fragment of the lower left side corner of a visor assembly of this invention comparable in all respects to the foregoing embodiment with exception of the means for retaining the shield locked in the frame after assembly. In this embodiment, wherein generally like parts to those of the foregoing embodiment are designated by the addition of the letter "b", the frame 16b is provided with oppositely arranged extended leg portions, only the left leg portion 22b being shown since left and right leg portions of the visor frame 16b and means for retaining the shield in the assembly are mirror opposites in construction. The retention means is provided as a shielding element retention hole 26b in the areas of each of its lower rear corners for frictionally receiving a retaining pin 28b forming the end of a spring arm 60, the parts 28b and 60 together forming a spring loaded retaining means 58. The rear-directed end of the spring arm is rigidly riveted to the outer face of leg portion 22b so the arm can be manually deflected outward to allow the face shielding element to be assembled into the groove 48b or the pin 28b to be removed from its locking position in the retention hole in the shielding element whenever desirable to remove it from the assembly.

In operation whenever it is desirable to replace the face shielding element 24 by removing it from the assembly, either because it is scratched or otherwise damaged or a tinted element is desired, friction pins 28, 28a are removed from the leg portions 22, 22a and the face shielding element 24 can then be pulled out of the inverted U-shaped groove 48. A replacement face shield element can then be inserted in groove 48 and positioned in the visor assembly until holes 26, 26a in the side portions of the face shielding element are in mating relationship with the holes 26, 26a in the leg portions 22, 22a respectively of the visor frame 16. At this point the friction pins 28, 28a can be inserted in holes 26 and 26a so as to lock the face shielding element rigidly in visor frame 16.

It will be appreciated that the face shielding element may be made from thin sheets of flat plastic material or may be molded or otherwise formed to a curvature. Also, the face shielding element may be colored to filter various type of light ray energy and with the ease of changing of the face shielding element of this invention, there is provided a visor assembly that can be adapted to the change of light conditions as well as being able to have the optical portion damaged and replaced without requiring the full replacement of the visor assembly.

It will be appreciated that various changes and modifications can be made, all within the scope of the inventive concepts contained herein.

WHAT IS CLAIMED IS:

1. A face shielding protective helmet device including a frame member having a curved horizontal portion that extends across the upper front of the helmet and a leg portion that extends from each end of said horizontal portion downwardly on the side of said helmet, said leg portions being integral with said horizontal portion to define said frame member, said frame member having an inner edge that is continuous; a "U"-shaped channel positioned in the inside edge of said horizontal portion and leg portions; a thin sheet of transparent face shielding material having a size so that its top and side edges are slidably positioned and held in said "U"-shaped channel with its bottom edge free; a helmet; cooperating attaching means on said helmet for attaching said frame member to said helmet; and releasable holding means in said frame member for locking said sheet of transparent face shielding material in said "U"-shaped channel so as to hold it by its top and side edges, whereby said frame member with said sheet of transparent material positioned therein forms a face shielding protective helmet device that is capable of having one of a variety of different face shielding materials exchangeably positioned therein.

2. The face shielding protective helmet device of claim 1 in which said releasable holding means in said frame member is a pair of pins, one of each frictionally fitting through a hole in both the lower portion of each leg portion and each side edge of said transparent face

shielding material.

3. The face shielding protective helmet device of claim 1 in which said frame member has a peak in which the inner edge thereof is inwardly curved and lies adjacent to the curvature of the outer front portion of said helmet.

4. A face shielding protective device adapted to be releasably mountable on a helmet including a frame member having a curved horizontal portion that extends across the upper front of a helmet and a leg portion that extends from each end of said horizontal portion downwardly on the side of a helmet, said leg portions being integral with said horizontal portion to define said frame member, said frame member having an inner edge that is continuous; a "U"-shaped channel positioned in the inside edge of said horizontal portion and leg portions; a thin sheet of transparent face shielding material having a size so that its top and side edges are slidably positioned and held in said "U"-shaped channel with its bottom edge free; attaching means on said frame member for releasably attaching said frame member to a helmet; and releasable holding means in said frame member for locking said sheet of transparent face shielding material in said "U"-shaped channel so as to hold it by its top and side edges, whereby said frame member with said sheet of transparent material positioned therein forms a face shielding protective device when mounted on a helmet so that said face shielding protective device is capable of having one of a variety of different face shielding materials exchangeably positioned therein.

5. The face shielding protective device of claim 4 in which said releasable holding means in said frame member is a pair of pins, one of each frictionally fitting through a hole in both the lower portion of each leg portion and each side edge of said transparent face shielding material.

6. The face shielding protective device of claim 4 in which said frame member has a peak in which the inner edge thereof is inwardly curved and adapted to lie adjacent to the curvature of the outer front portion of a helmet.

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