

[54] **FACE SHIELD**  
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 [73] Assignee: **American Safety Equipment Corporation of Michigan**, Detroit, Mich.  
 [22] Filed: **Nov. 19, 1968**  
 [21] Appl. No.: **786,795**

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**Related U.S. Application Data**

[63] Continuation-in-part of Ser. No. 651,476, July 6, 1967, abandoned.

[52] **U.S. Cl.**.....2/9  
 [51] **Int. Cl.**.....A42b 1/08  
 [58] **Field of Search**.....2/9, 10, 4, 5, 6, 7, 8

[57] **ABSTRACT**

A transparent, protective face shield, having a relatively stiff headband portion to which the upper, opposite ends of a flexible, transparent sheet are pivotally secured, and the upper center of the sheet is releasably secured by a snap fastener mounted upon a flexible strap, the strap serving as a quick release handle.

**References Cited**

**UNITED STATES PATENTS**

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**2 Claims, 7 Drawing Figures**

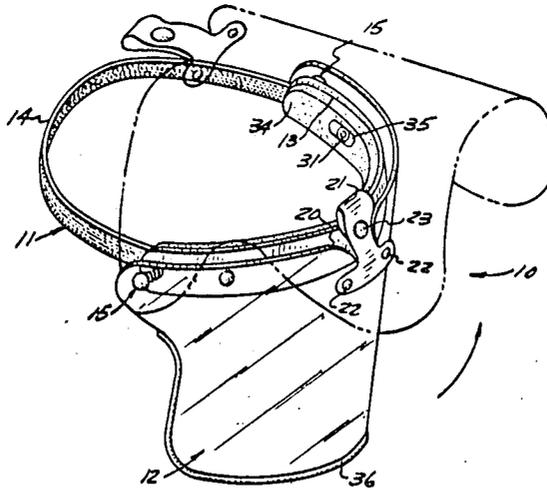


FIG. 1

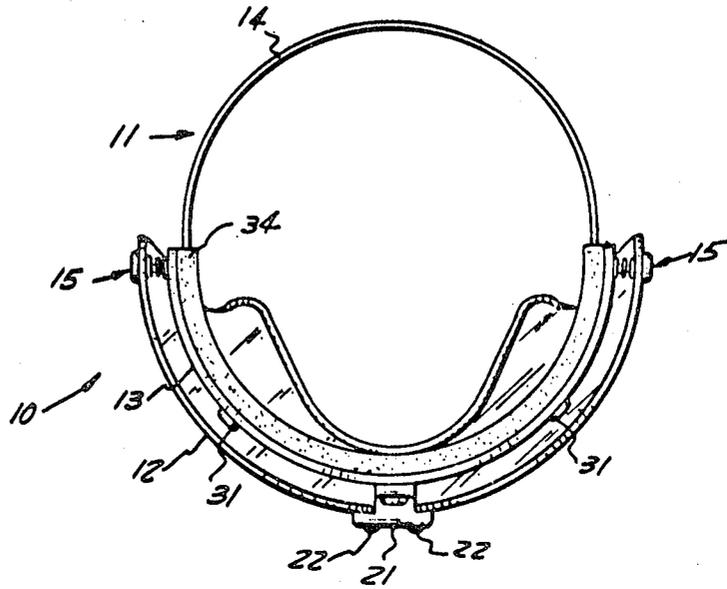


FIG. 2

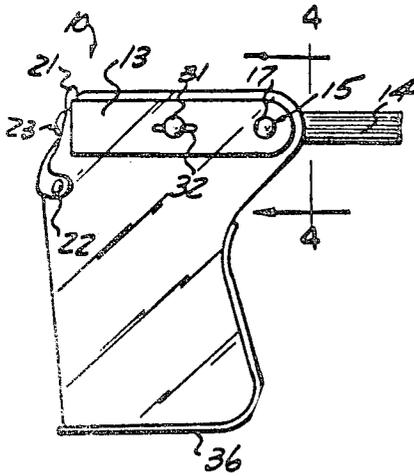


FIG. 3

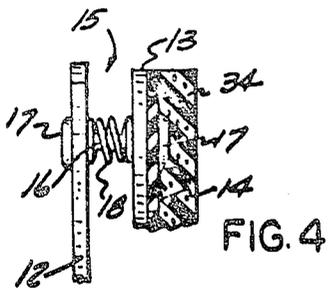
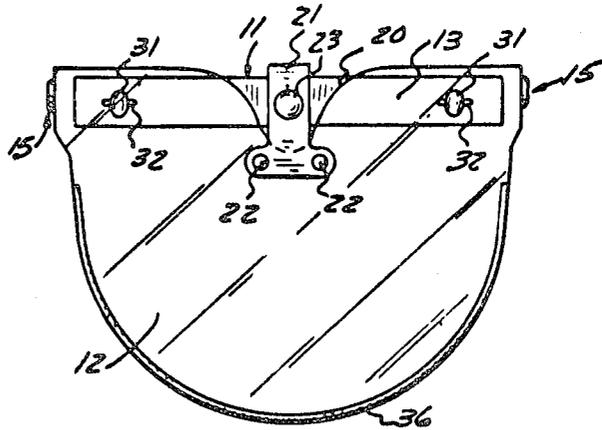


FIG. 5

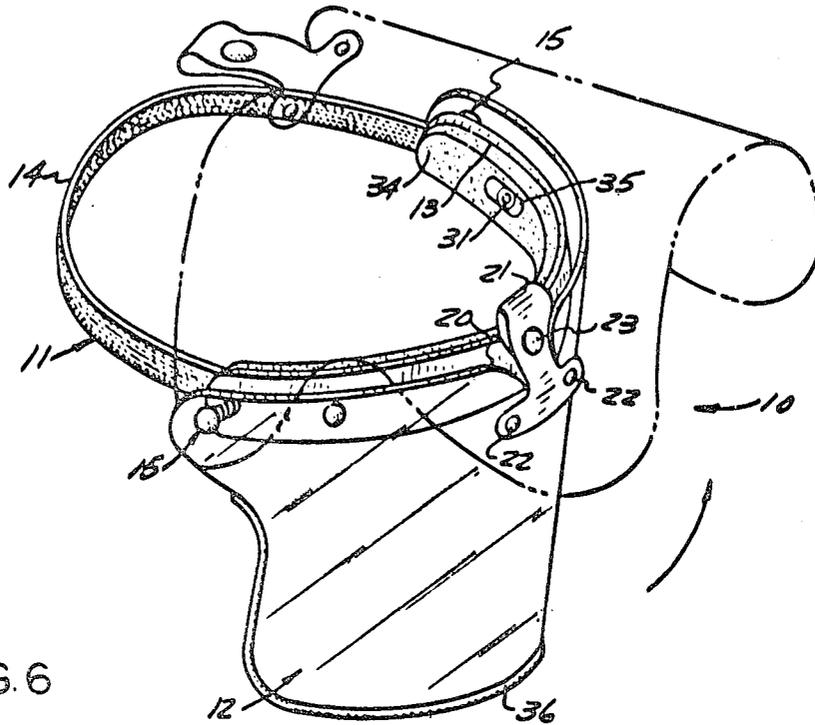


FIG. 6

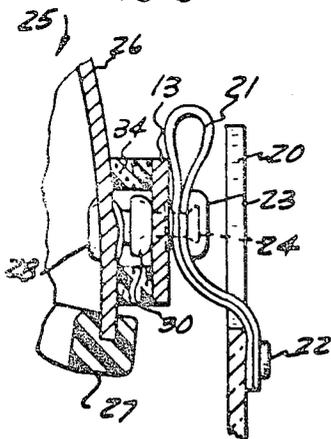
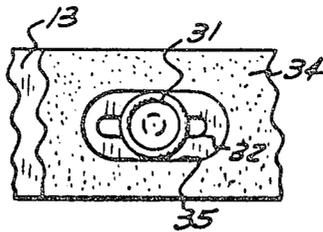


FIG. 7



## FACE SHIELD

This application is a continuation-in-part of Ser. No. 651,476, filed July 6, 1967, now abandoned.

## BACKGROUND OF INVENTION

Safety helmets, used by motorcyclists, racing car drivers and the like, have frequently been provided with transparent, protective face shields to protect the face of the wearer against wind, dust and dirt, flying stones, etc. Such shields have conventionally been in the form of a large, transparent sheet, suitably bent to cover the wearer's face, and fastened directly to the helmet either permanently or by releasable fastening means.

Such face shields have been difficult to release or swing out of the way using only one hand, as is sometimes necessary while driving a motorcycle or other vehicle. In addition, their capacity to flex or move to better absorb impact energy has been limited. Further, they could be worn only with the protective safety helmet and normally could not be used independently of the helmet.

## SUMMARY OF INVENTION

It is an object of this invention to provide a protective face shield pivotally mounted upon a band, adapted to be worn either upon or separate from a safety helmet, with the upper center portion of the shield having a flexible strap snap fastened to the band and extending above the band to provide both a flexible connection and a quick release handle for one hand release of the connection and pivoting of the shield above the wearer's head.

Another object of this invention is to provide a means for mounting a face shield upon a supporting headband which permits considerable flexing of the face shield under impact to thereby better absorb impact energy, and reduce breakage of the shield.

These and other objects and advantages of this invention will become apparent upon reading the following description, of which the attached drawings form a part.

## DESCRIPTION OF DRAWINGS

FIG. 1 is a top, plan view of the protective face shield herein.

FIG. 2 is a side elevational view of the face shield, and

FIG. 3 is a front elevational view thereof.

FIG. 4 is an enlarged, fragmentary view taken in the direction of arrows 4-4 of FIG. 2.

FIG. 5 is a perspective view showing the face shield in normal use position in solid lines and in elevated, non-use position, in phantom lines.

FIG. 6 is a fragmentary cross-sectional view showing the connection between the center of the face shield and a safety helmet, and

FIG. 7 is a fragmentary view of the headband and snap-fastener arrangement.

## DETAILED DESCRIPTION

The protective face shield 10 generally comprises a headband 11 with a transparent panel 12 secured thereto. The headband is formed in two sections, namely, a front strip portion 13 made of a flat, relatively stiff,

but slightly flexible sheet material, and an elastic band portion 14, whose opposite ends are connected to the opposite ends of the front strip portion. One example of a material suitable for use as the front strip portion is "ABS" plastic, 0.090 inches thick.

The transparent panel may be formed of any suitable transparent plastic sheet which is relatively stiff, but flexible under impact. One suitable material found useful for this purpose is identified as Butyrate, or polycarbonate, 0.08 inches thick.

The opposite, upper ends of the transparent sheet are connected to the front, strip portion 13 by means of pivotal connections 15 (see FIG. 4) which comprise rivet-like pins loosely passing through openings in both the sheet and strip and having opposite heads 17, with a coil spring 18 encircling the pin so as to urge the sheet and the strip apart against their respective heads 17.

A cut-away notch or central depression 20 is formed at the center of the horizontal upper edge of the sheet. A flexible strap 21 formed of two integral T-shaped sections folded to overlap, is arranged in this depression, with its lower end fastened by rivets 22 to the sheet below the depression. The strap is provided with a centrally arranged snap-fastener half 23 arranged to releasably engage a corresponding snap-fastener half 24 fastened to the strip portion 13 (see FIG. 6). The upper edge of the strap is thickened by the loose or bulged fold of the two overlapped strap sections and may be easily hand grasped for releasing the snap fastener 23-24. Hence, it acts as a quick release, readily accessible handle by which the center of the shield may be disengaged and lifted upwardly to pivot over the wearer's head.

The three connections supporting the sheet at its opposite ends and at its center are relatively flexible and movable so that the sheet may easily flex and move under impact to thereby resist breakage and to absorb the energy of impact.

As illustrated, for example, in the patent to Marchello, U.S. Pat. No. 3,239,842 of Mar. 15, 1966, safety helmets are frequently provided with snap-fastener halves in order to engage suitable visors and the like. It is contemplated here to utilize such types of snap-fastener halves, mounted upon the safety helmets, as one means of supporting the face shield herein. Thus, FIG. 6 illustrates a portion of a safety helmet 25, namely, the helmet shell 26 with its conventional lower, rubber edge bead 27 and with a snap-fastener half 28 secured to the shell. Although only one snap-fastener half is shown, it is contemplated that three would be used, as illustrated in the above mentioned Marchello patent.

Thus, the front strip portion 13 is provided with a suitable, centrally located, snap-fastener half 30 and opposite end snap-fastener halves 31, each of which are secured to the strip through elongated slots 32 for horizontal adjustment to the locations of the snap-fastener halves formed on the helmet shell. It is contemplated to fasten each of the three strip mounted snap-fastener halves to the snap-fastener halves located upon the shell, thereby securing the strip to the shell for mounting the transparent sheet.

The front strip portion is preferably covered with a relatively thick, resilient padding strip 34 which may be adhesively secured thereto and may be formed of a

suitable resilient sponge rubber or foamed plastic material, provided with elongated openings 35 (see FIG. 7) at the snap-fastener halves so that the padding functions either to seal the strip against the helmet shell when the strip is mounted thereon or in the alternative to cushion a human head without a helmet. The padding thus prevents the snap-fastener halves from contacting and pressing against the human head.

As shown in FIG. 3, the exposed lower edges of the transparent sheet is bound with a suitable edge bead 36 which may be formed of a rubber or rubber-like plastic material, to both protect the raw edges of a plastic forming the sheet as well as to further rigidify the same.

The three-point connection of the transparent sheet to the headband front strip portion spaces the sheet from the head portion to thereby permit free circulation of air for increased comfort to the wearer. At the same time, this spacing, along with the flexibility of the strap, central point connection and the springiness of the two end point connections, permits considerable flexing of the transparent sheet under the impact of flying objects such as stones and the like, and upon impact against a solid object, such as the ground during an accident. Thus, the flexing of the face shield coupled with the resistance the coil springs 18 tends to absorb a considerable portion of the energy of impact and moreover, permits the of shield to receive considerable impact loads without cracking or breaking.

Having fully described an operative embodiment of this invention, I now claim:

1. A face shield comprising:

a horizontally arranged, elongated band;  
 a normally vertically arranged, transparent, transversely bent, flexible panel having a horizontal upper edge overlapping the band, and a centrally located deep depression formed in said upper edge;  
 pivot means connecting the opposite, upper ends of the panel to the band for pivoting the panel out of the vertical and into an approximately horizontal position above the band; a snap fastener half centrally positioned on said band; and  
 a normally vertically arranged flexible strap overlapping said depression and having a lower end secured to the panel below the depression, an upper end extending slightly upwardly above the depression and having a central snap-fastener half mating with and releasably connected to said snap-fastener half mounted upon the band, with the snap-fastener being arranged in approximately the same plane as the pivot means to form a three point support for the panel upon the band;  
 with the strap portion between the snap-fastener and its lower end thereby flexibly connecting the panel center portion to the band, and the upper end portion of the strap serving as a quick release handle for disconnecting the snap-fastener.

2. A construction as defined in claim 1, and said strap being formed of a folded strip, with the fold being loosely bulged and being the upper end of the strip for thereby thickening the strip for manual grasping.

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