United States Patent [19]

Raschke

[11] **3,797,041**

[45] **Mar. 19, 1974**

[54] **FACE SHIELD BRACKET MOUNT FOR HELMETS**

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[73] Assignee: **E. D. Bullard Company,** Sausalito, Calif.

[22] Filed: **Mar. 16, 1972**

[21] Appl. No.: **235,224**

[52] **U.S. Cl.** **2/8**

[51] **Int. Cl.** **A61f 9/06**

[58] **Field of Search** 2/6, 8, 9, 10

[56] **References Cited**

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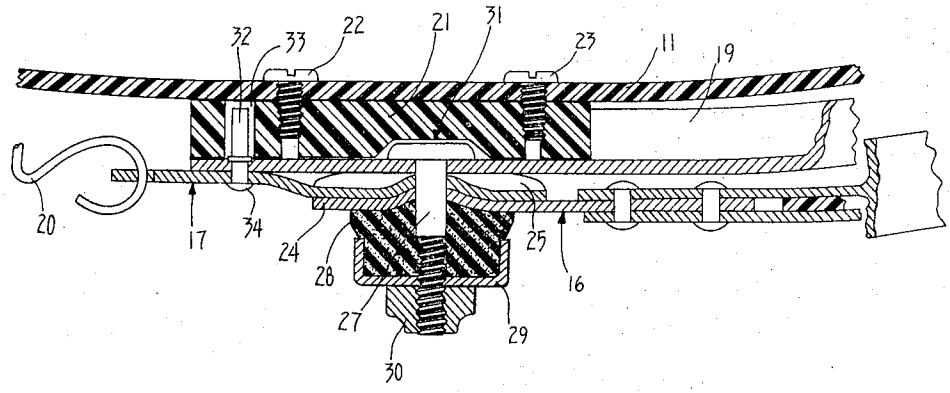
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Primary Examiner—James R. Boler
Assistant Examiner—Wai M. Chan

[57] **ABSTRACT**

An assembly for mounting a face shield on a protective hard hat. The assembly has an arcuate support member which defines channel portions at least in the region of its two ends. A correspondingly shaped arcuate frame member is pivotally mounted with respect to the support member. The frame member is adapted to secure a depending face shield therefrom. The frame member and face shield are mounted on a hard hat by the support member with a pair of elongate blocks which are insertable within the channel portions of the support member. The elongate blocks are fastened to opposed exterior sidewalls of the hard hat. Also included are releasable retainer means at a fixed location therealong when the blocks are fastened to the hat.

3 Claims, 8 Drawing Figures



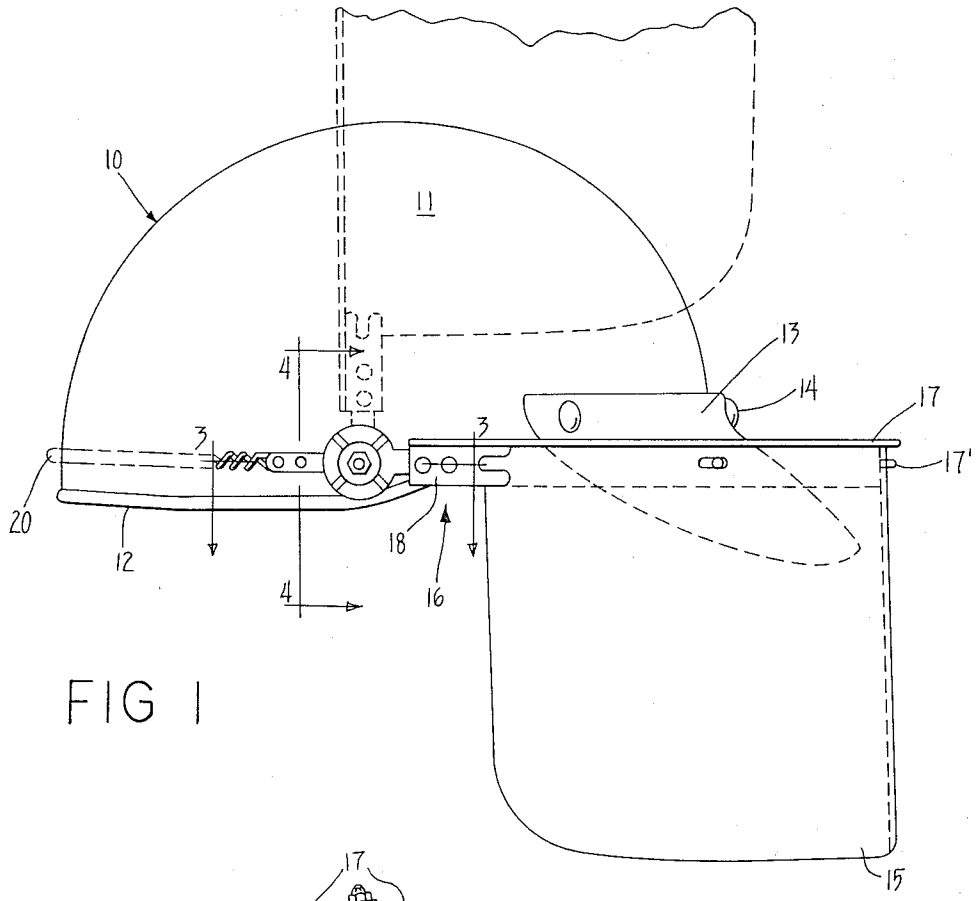


FIG 1

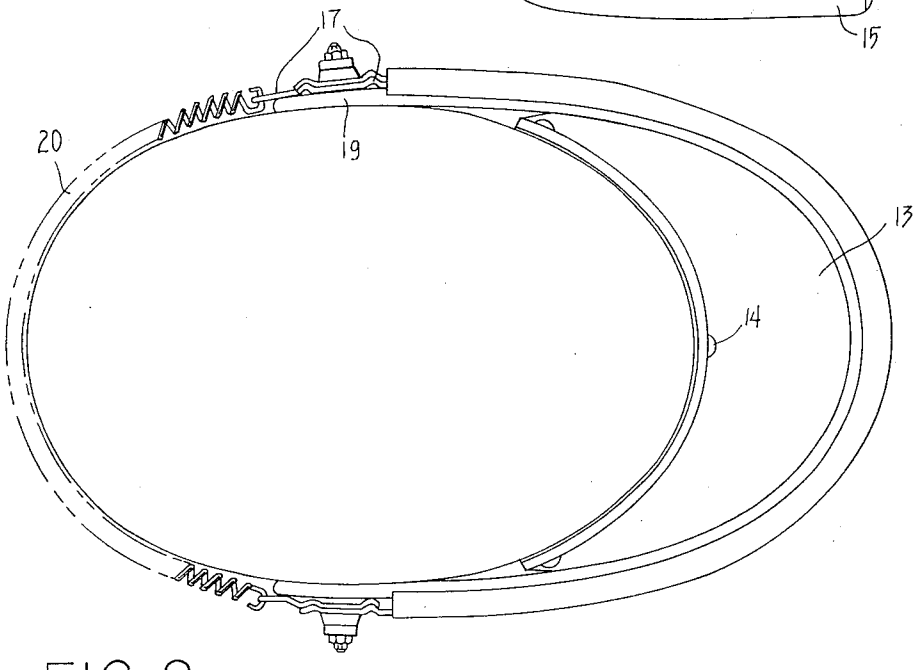


FIG 2

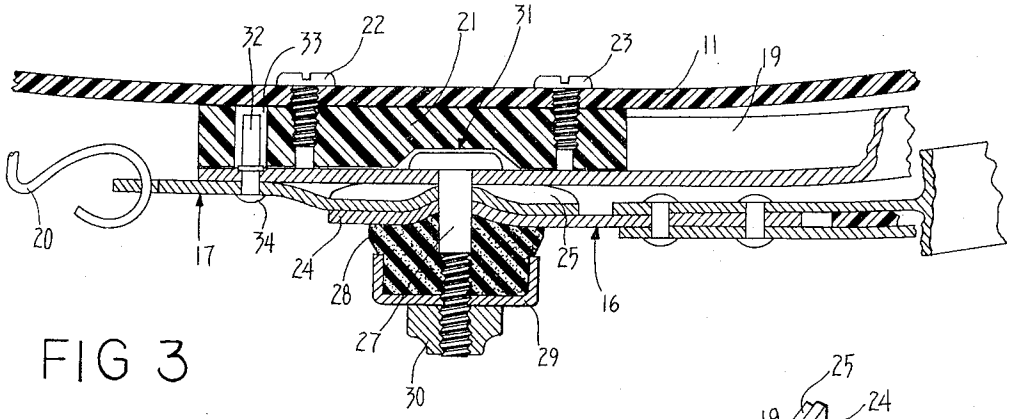


FIG 3

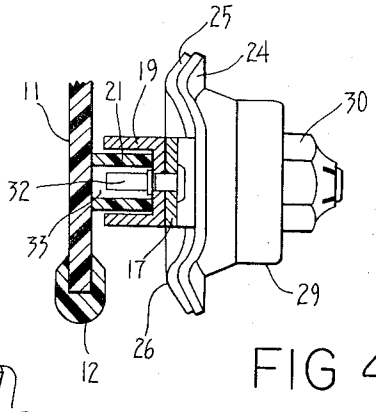


FIG 4

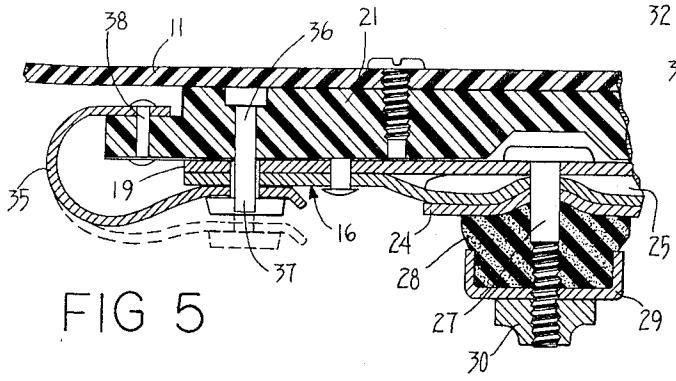


FIG 5

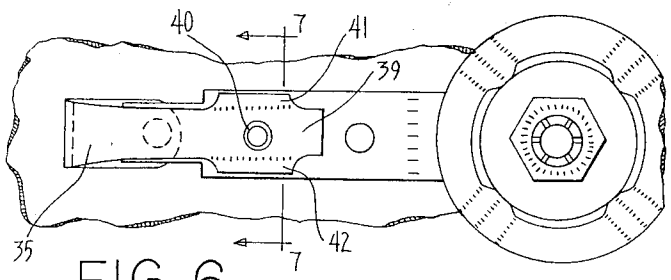


FIG 6

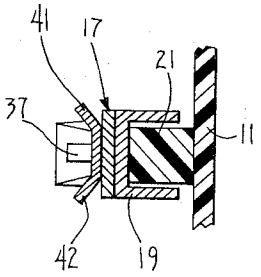


FIG 7

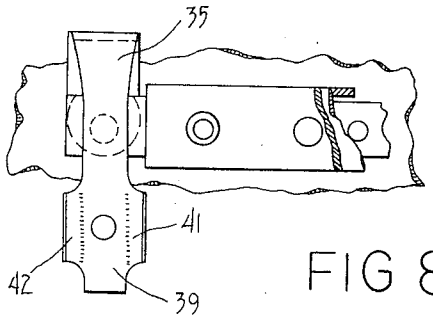


FIG 8

FACE SHIELD BRACKET MOUNT FOR HELMETS

This invention relates to protective hats and face shields useful therewith. More particularly, it relates to an assembly for removably mounting a face shield on a protective hat.

The combination of a face shield which is removably mounted on the brim of a safety hat designed to provide full head and face protection is known in the art. Such a combination is disclosed in U.S. Pat. No. 3,114,914, issued Dec. 24, 1963. The present invention represents an improvement on devices of the type shown in said patent.

In the present invention an assembly is provided for removably mounting a face shield on a protective helmet (commonly referred to as a "hard hat") so that the face shield depends in front of the hat. As a result, the visor of the hat can be utilized together with the face shield. Prior devices such as that shown in the above-referenced U.S. Pat. No. 3,114,914 provide removable face shield mountings which support the face shield on the rear of the hat. In many areas of use for protective helmets such as that of motorcycle drivers, it is desirable to utilize the face shield concurrently with the sun visor. As will be seen, the present construction permits such a possibility.

Moreover, in the prior art, the face shield mounting brackets were designed to engage the beaded edge or rim of the hat crown and place relatively large stresses thereon. Because of this requirement for supporting the bracket, positioning of the face shield at the rear of the hat was essential where the visor lacked sufficient strength. The present mounting assembly while being used to depend the face shield at the front end of the hat is designed so that contact with the rim of the visor or any other portion of the hat rim for support purposes is eliminated. This is a desirable feature in that visors such as the removable non-structural type would not be sufficiently strong to withstand the stresses placed on it if such a visor were used as a supporting surface.

The present mounting structure is designed so that it can be applied to protective helmets universally regardless of the configuration of the visor. If engagement with the edge of the visor were required for support purposes, the supporting frame would have to be made available in all of the various configurations found on protective hat visors.

Briefly, the foregoing advantages and others to be discussed are provided by the present invention for supporting a face shield on any selected protective hat with an assembly including an arcuate support member defining channel portions at least in the regions of its two ends. A correspondingly shaped arcuate frame member is pivotally mounted with respect to the support member which is adapted for depending the face shield therefrom. The support member is mounted on the protective hat with a pair of elongate blocks which are insertable within the channel portions of the support member. The elongate blocks are fastenable to opposed exterior sidewalls of the hat. Also included are releasable retainer means for maintaining the blocks within said channel portions at a fixed location therealong when the blocks are fastened to the hat.

The invention is specifically illustrated in the accompanying drawings in which:

FIG. 1 is a side-elevational view of a protective helmet having the present mounting assembly thereon and showing a face shield depending from the mounting assembly at the front of the hat in advance of the visor;

FIG. 2 is a top-elevational view of the combination shown in FIG. 1;

FIG. 3 is a partial sectional view taken along the line 3—3 of FIG. 1 particularly showing details of the relationship between the arcuate support member and the elongate blocks mounted on the hat;

FIG. 4 is a partial sectional view taken along the line 4—4 of FIG. 1;

FIG. 5 is a partial sectional view of an alternative embodiment showing the area of cooperation between the elongate blocks and arcuate frame;

FIG. 6 is a side elevation view of that portion of the alternative embodiment of FIG. 5;

FIG. 7 is a partial sectional view taken along the line 7—7 of FIG. 6; and

FIG. 8 is a side elevation view of that portion of the apparatus shown in FIG. 6 and particularly illustrating the retainer clip of FIG. 6 rotated into release position.

Considering the drawings in more detail, FIGS. 1 and 2 illustrate a protective helmet indicated generally at 10 having a hard crown 11 including a beaded rim 12 and a relatively soft flexible visor 13 mounted on the front of crown 11. Visor 13 is removably attached to crown 11 with a plurality of snap engageable fasteners such as snap 14. FIGS. 1 and 2 generally illustrate the manner in which the present mounting assembly is positioned on hat crown 11 to support face shield 15 therefrom forwardly of visor 13. It is to be noted that the mounting assembly indicated generally at 16 for the support of face shield 15 does not place any stresses upon or structurally utilize visor 13. It may also be seen that mounting assembly 16 is of the type permitting rotation of face shield 15 into a down position for protection of the face of the wearer of the hat. At such time that protection by face shield 15 is not desired by the wearer, the mounting assembly can be rotated so that the face shield is in an upward position as shown in phantom in FIG. 1.

FIGS. 1 and 2 illustrate the relative arrangement of the major components employed in the present invention. Thus face shield 15 is depended from arcuate frame member 17. Face shield 15 is removably attached to frame 17 through a series of studs, such as 17', which are inserted through apertures in the upper margin of face shield 15. The ends of face shield 15 are held by clips such as clip 18 on frame 17. Arcuate frame member 17 is pivotally mounted at its ends on a correspondingly shaped arcuate supporting channel 19. Support channel 19 is maintained in engagement with elongate blocks (as will be explained more fully hereinafter) which are fixed to the exterior sidewalls of crown 11 by elongate coil spring 20 which is attached to the two ends of arcuate frame member 17.

FIG. 3 illustrates elongate block 21 which is attached to the lower portion of the exterior sidewall of crown 11 by threaded fasteners 22 and 23. While the following discussion will for simplicity be limited to the arrangement for mounting the face screen assembly on one side of crown 11, it will be understood that a duplicate arrangement is found on the opposed exterior sidewall of crown 11.

Threaded fasteners 22 and 23 are inserted from the inside of crown 11 to engage elongate block 21 which is disposed on the exterior of crown 11 in a position

generally parallel with crown rim 12. Preferably, the position of block 21 will be in the relatively flat temple region on the sides of crown 11. Where such a position is selected, the contacting surface of block 21 can be preformed in a generally flat configuration. If other regions on the exterior of crown 11 were employed and more curvature thereby encountered, the blocks would have to be curved to permit a sufficient area of contact with crown 11. In view of the relatively high forces which block 21 is subjected to during rotation of face shield 15 to its upward position, it is preferred that block 21 be attached to crown 11 at at least two spaced apart locations (fasteners 22 and 23) as shown in FIG. 3.

FIGS. 3 and 4 illustrate arcuate support member 19 in engagement with block 21. FIGS. 3 and 4 further illustrate the conventional manner in which arcuate frame member 17 is pivotally connected to support channel 19 at its ends. The pivotal connection includes mating plate sections 24 and 25 having radial interengaging beads such as 26 (see FIG. 4). Plate sections 24 and 25 are joined by bolt 27, thick soft rubber washer 28, metal cup 29, and nut 30 threaded on the outer end of bolt 27. When nut 30 is suitably tightened, frame member 17 is pivotally engaged with supporting arcuate channel member 19. In general, frame member 17, channel member 19 and the pivotal connection therebetween may be similar to that shown in the above-referenced U.S. Pat. No. 3,114,914. While arcuate support member 19 may be formed as a continuous arcuate channel, it is only necessary that arcuate support member 19 define channel portions in the approximate region of its ends for cooperation with the elongate blocks such as block 21. Frame member 17 may suitably be of the T-section type as described in the above-referenced U.S. patent, although any other suitable type of frame and face shield may be employed. While the present invention contemplates a pivotal connection between the frame and support member so that the face shield can be rotated in and out of operative position, it is contemplated that a non-rotatable arrangement may be employed in accordance with the present invention.

When support channel 19 is engaged with block 21 as shown in FIG. 3, it is held in such engagement by elongate coil spring 20. Such a relationship provides substantially the sole structural restraint against rotation of channel 19 relative to crown rim 12 during wearing of the hat and face shield combination and during rotation of frame 17 and face shield 15 between the two positions shown in FIG. 1 hereof. In general, block 21 is suitably shaped to conform relatively closely to the inside surfaces of the walls of channel 19. Preferably block 21 is of a length sufficient to substantially prevent rotation of channel 19 relative to crown rim 12. It has been found that when employing channels of a width of about one-fourth inch, a length of about 2 inches for block 21 provides a relationship which substantially prevents all undesired rotations and twisting of channel 19 when mounted on block 21.

In order to obtain a close conformation of block 21 to the inside surfaces of channel 19, block 21 is notched as at 31. Notch 31 receives the head of bolt 27 which extends on the inside surfaces of channel 19 so that the remaining portions of block 21 can meet and provide secure supporting contact with the inside surfaces of channel 19.

Whereas spring means such as elongate coil spring 20 which is tensioned around the back of crown 11 (as best seen in FIGS. 1 and 2) serves to maintain channel 19 in engagement with block 21, relative longitudinal movement between channel 19 and block 21 may occur. To prevent any such longitudinal movement, pin 32 is inserted transversely through channel 19 and block 21. Pin 32 is fixed with respect to only one of channel 19 and block 21 and is removably inserted in the other one thereof to permit attachment and removal of the entire face shield mounting assembly from hat 10. As shown in FIGS. 3 and 4, pin 32 is fixedly mounted on channel 19 and removably inserted in a cooperatively positioned and shaped slot 33 defined by block 21. Additional construction strength may be obtained by fixing pin 32 to both channel 19 and frame 16 as at 34 in FIGS. 3 and 4.

In the alternate embodiment of FIGS. 5–8, a pair of spring clips such as clip 35 replaces coil spring 20 of the embodiment shown in FIGS. 1–4. Only one spring clip is illustrated in FIGS. 5–8 and again it should be appreciated that a corresponding spring clip will be employed on the opposed side of crown 11.

In the embodiment of FIGS. 5–8 only the points of divergence from the embodiments of FIGS. 1–4 will be described, all other parts and their relationship and function being similar. As seen in FIG. 5, transverse pin 36 is fixedly mounted in elongate block 21 and extends outwardly therefrom through channel 19 and frame 17 passing through apertures defined therein. Channel 19 and frame 17 are retained in position by one end of spring clip 35 which defines an aperture therein and which is mated with the outwardly extending portion 37 of pin 36. Spring clip 35 is rotatably mounted on block 21 on pin 38 which is spaced from pin 36. As a result, when clip 35 is lifted off extending portion 37 of pin 36 as shown in phantom in FIG. 5, clip 35 may be rotated to a position allowing unobstructed insertion and removal of pin 36 from the adjacent cooperating apertures in channel 19 and frame 17. Such a position is illustrated in FIG. 8.

Attention is invited to FIGS. 6 and 7 which further illustrate the configuration of spring clip 35. Spring clip 35 includes a substantially flat central body portion 39 defining aperture 40 therein which cooperates with extending portion 37 of pin 36. Body portion 39 of clip 35 is continuous with upturned ears 41 and 42 disposed along the margin of body portion 39. Ears 41 and 42 facilitate hand movement of spring clip 35 relative to pin 36.

I claim:

1. An assembly for mounting a face shield on a protective hard hat comprising: an arcuate support member defining channel portions at least in the regions of the two ends thereof; a correspondingly shaped arcuate frame member pivotally mounted with respect to said support member, said frame member being adapted to secure a depending face shield therefrom; and structure for mounting said support member on a hard hat including a pair of elongate blocks insertable within the channel portions of said support member and fastenable to opposed exterior sidewalls of said hat, and releasable retainer means for maintaining said blocks within said channel portions at a fixed location therealong when said blocks are fastened to said hat, said retainer means including pins insertable to transversely engage each of said blocks with its adjacent channel portion

respectively, each pin fixed to one of its associated block or channel portions and removable from the other, and spring means for maintaining said blocks within said channel portions and said pins in transverse engagement, said spring means comprising a pair of spring clips, each clip being mounted at one of its ends on each of said blocks, the other end of each clip defining an aperture for receiving the pin associated with its block, each pin being fixed at one end in its associated block and insertable removably through its adjacent channel portion with a section of the pin extending outwardly from the channel for mating with the aperture of one of said clips.

2. An assembly for mounting a face shield in accordance with claim **1** wherein each spring clip is rotatably mounted on one of said blocks at a point spaced from the longitudinal axis of said pins whereby said clips may be rotated to a position allowing unobstructed insertion and removal of said pins from the adjacent channel portions.

3. An assembly for mounting a face shield in accordance with claim **1** wherein each spring clip has a substantially flat central body portion and upturned ears at least in the region of its aperture to facilitate hand movement of each clip relative to its associated pin.

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