

[54] CERVIX GUARD FOR PROTECTIVE
HEADGEAR

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[51] Int. Cl..... A63b 71/10
[58] Field of Search 2/3 R

[56] References Cited

UNITED STATES PATENTS			
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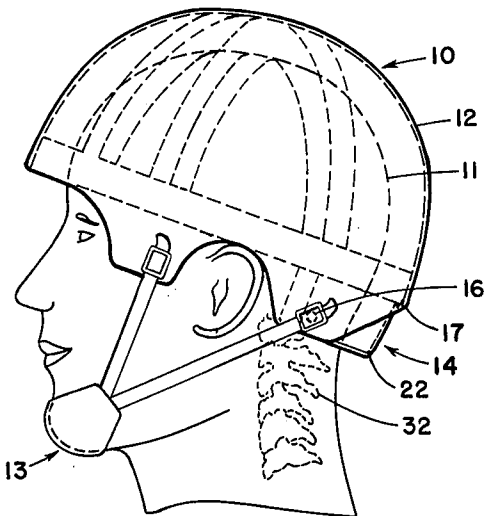
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Primary Examiner—Werner H. Schroeder
Attorney, Agent, or Firm—Olsen and Stephenson

[57] ABSTRACT

An improved cervix or nape guard for protective headgear of the hockey type and also for industrial helmets, wherein the guard is formed of a semi-resilient plastic generally conforming to the inside surface of the rear of the helmet shell, depending downwardly to substantially cover a high cut opening at the back of the headgear and having means for pivoting upward and inward with little pressure upon contact with the neck of the wearer when the head is forcibly tilted backward.

3 Claims, 6 Drawing Figures



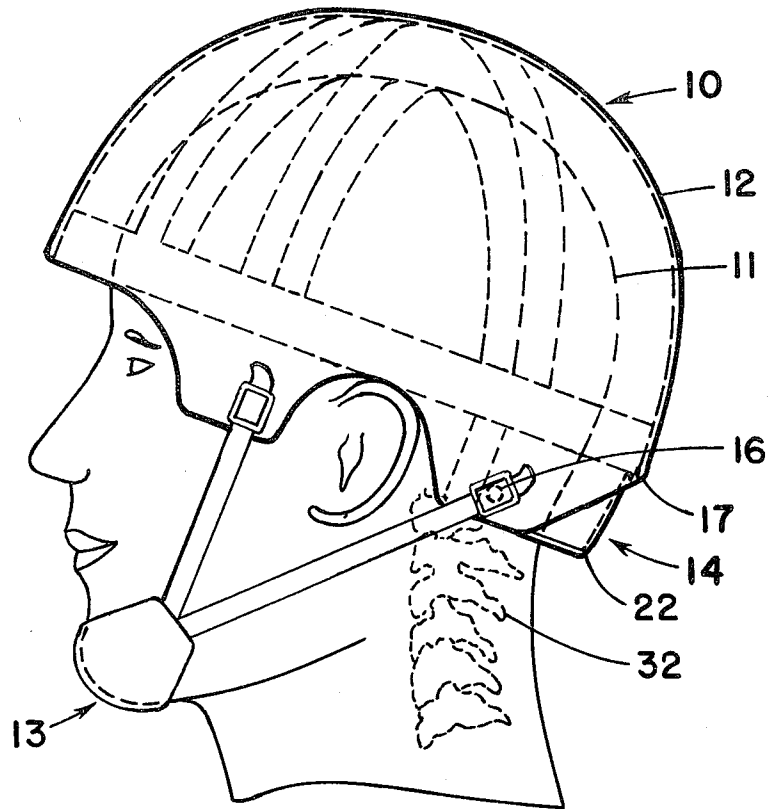


Fig. 1

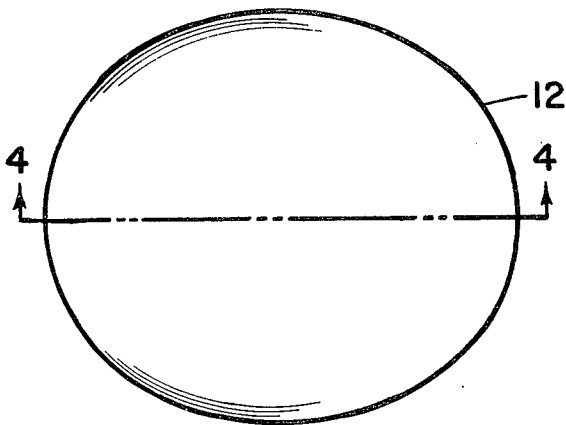


Fig. 2

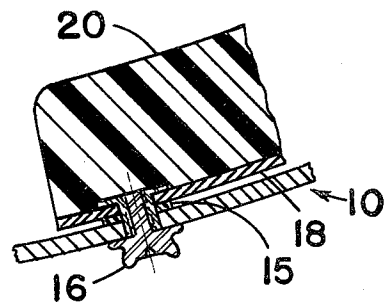
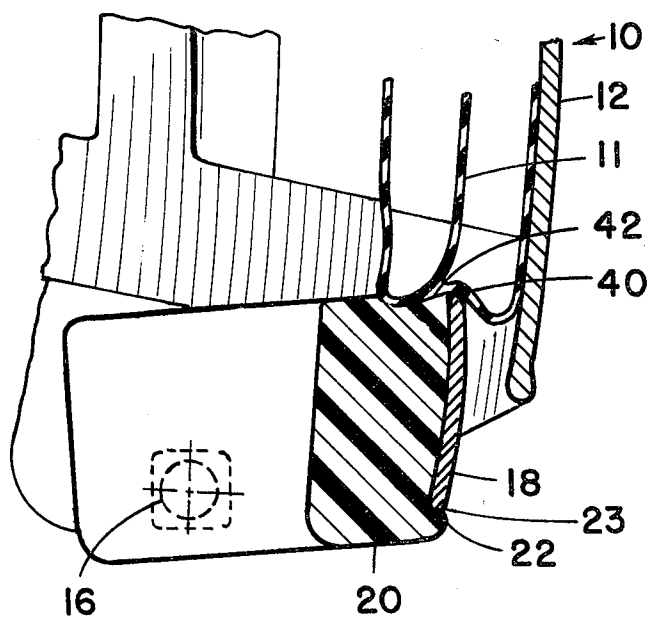
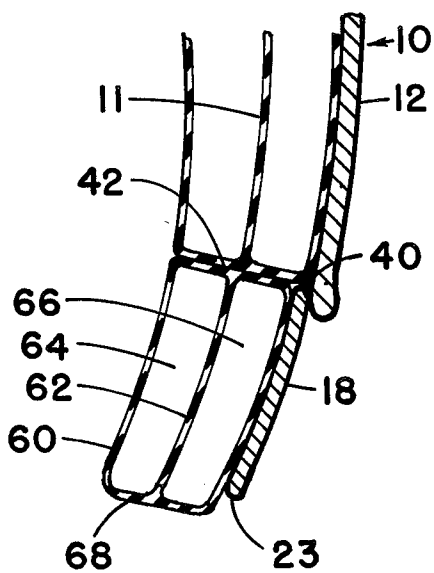
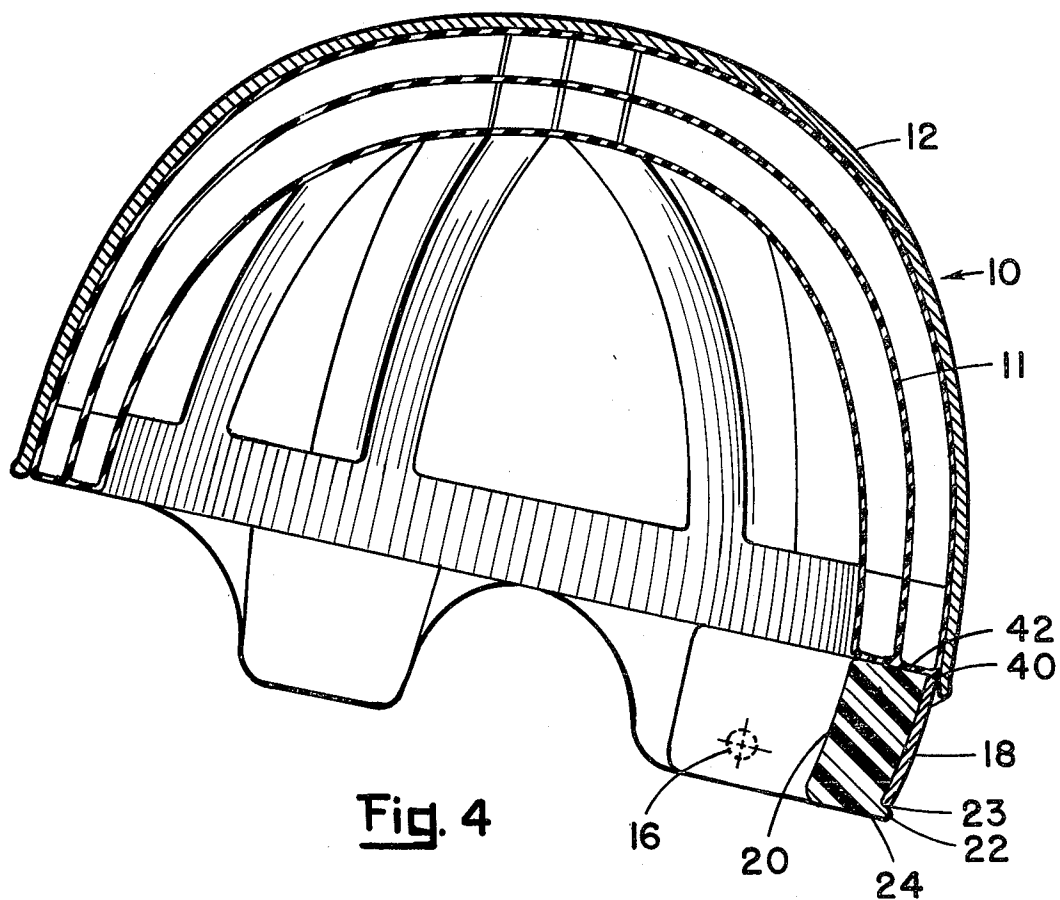


Fig. 3



CERVIX GUARD FOR PROTECTIVE HEADGEAR

There is a need for protection of the cervix or nape of wearers of protective headgear such as for hockey. This area is very vulnerable to inadvertent blows from hockey sticks and therefore must be protected. However, severe injury to the cervix can result when the head of a wearer who is wearing a helmet with a low posterior, is forcibly tilted backward so that the back of the rigid outer shell of the headgear contacts the neck. A further backward tilting of the helmet can cause a cervical dislocation. Attempts to solve this problem are as disclosed in U.S. Pat. Nos. 3,230,544 and 3,323,134. The modified protective headgear constructions shown in these patents generally comprise rigid shells provided with generally shape conforming panels overlying the rear portion and designed to move back and upward upon contact with the neck of the wearer. They also employ straps inside the helmets to restrain the panels in the normal down positions and require undue pressure on the neck to forcibly cause the panels to move backward and upward with an increase in pressure on the neck as the panels move further backward and upward. Since this additional pressure is applied through the neck, the neck will still be subjected to relatively large, possibly injurious forces.

The primary object of this invention, therefore, is to provide in a protective headgear an improved pivoting cervix guard whereby a minimal force on the neck is required for moving it from a normal protective position.

This invention provides an improved cervix guard for protective headgear in which the guard is protectively padded and pivotally mounted so that only a minimal force is required to move the guard from its lower protective position to an upper position telescoped into the headgear.

The present invention is further described in detail in the accompanying drawings in which:

FIG. 1 is a side elevation view illustrating the cervix guard of this invention in assembly relation with a protective headgear shown in position on a wearer;

FIG. 2 is a top plan view of the protective headgear shown in FIG. 1;

FIG. 3 is a fragmentary sectional view of a portion of the headgear showing the pivotal mounting for the guard;

FIG. 4 is an enlarged sectional view of the headgear as seen from the line 4—4 in FIG. 2;

FIG. 5 is an enlarged fragmentary sectional view illustrating the cervix guard in a raised position within the protective headgear; and

FIG. 6 is a fragmentary sectional view illustrating a modified form of the cervix guard of this invention.

Referring to FIG. 1, the protective headgear with cervix guard of this invention, indicated generally at 10, consists of a resilient outer shell 12 and a multi-cellular inflatable inner support crown 11 described in detail in my U.S. Pat. No. 3,462,763. The helmet 10 is shown in FIG. 1 positioned on a wearer's head and retained thereon by a chin cup and strap assembly 13.

The cervix guard 14 comprises a panel 18 mounted on the shell 12 so that in the normal position of the panel 18 protecting the wearer's cervical spine 32, the panel fills the space the lower edge 17 of the shell 12. The outer shell 12 is shaped high at the rear edge 17 so as to leave an opening below the rear edge 17 which constitutes the space filled by the panel 18. The cervix

guard panel 18 in the preferred embodiment of this invention is molded of poly-carbonate commonly known as LEXAN, to conform to the contour of the inner surface of the outer shell 12. It is attached to the outer shell 10 by pivot pins 16, which also serve as the rear male snap fasteners for the chin strap assembly 13. A polyester foam plastic pad 20 is secured to the inside surface of the panel 18 with a suitable moisture proof adhesive so that a small portion 22 overlaps the bottom edge 23 of the panel 18.

In the use of the headgear 10, when the head of the wearer is forcibly tilted backward so that the lower surface 24 of the cervix guard pad 20 contacts the wearer's neck, the cervix guard rotates upward and forward within the outer shell 12 about the pins 16. The upper edge 40 of the panel 18 presses upward into the bottom surface of the inner support crown 11 thereby attenuating the force of the upward thrust. As shown in FIG. 5, the guard 14 telescopes into the outer shell 12 and displaces the inner crown 11. A slight and downward motion on the lower overlap edge of the cervix guard 14 will return it to its protective down position. Nylon washers 15 on the pins 16 (FIG. 3) maintain the cervix guard panel 18 in a spaced relationship to the outer shell 10 to provide for free pivoting action of the cervix guard upwardly into the outer shell 12.

A modified form of the cervix guard pad means is illustrated in FIG. 6 in which a partitioned chamber member 60 forms a yieldable resilient material shaped to conform to the inner surface of the panel 18. A partition 62 within the hollow section 60 forms a plurality of enclosed cells 64 and 66, arranged in side-by-side relation in a direction extending parallel with the cervix guard panel 18. The bottom surface 68 of the section 60 extends below the bottom edge 23 of cervix guard panel 18 so that when the bottom surface 68 contacts the wearer's neck, it moves outwardly into protective relation with the bottom edge 23 of the cervix guard panel 18. When the wearer's head tilts backward far enough for the bottom surface 68 of the section 60 to contact the wearer's neck, any additional backward movement of the wearer's head will cause the cervix guard to pivot upward and inward so that the upper surface 42 of the section 60 and the upper edge 40 of the cervix guard panel 18 will push upward into the bottom surface of the multi-cellular inflatable inner support crown 11. The chambers 64 and 66 are pre-inflated with air or inert gas differentially to pressures best suited for a particular application.

From the above description it is seen that this invention provides protective headgear 10 in which a pivoted cervix guard 14 protects the spine of the wearer by virtue of its capability to move easily.

What is claimed is:

1. A protective headgear assembly comprising an outer shell having sides and shaped high at the rear edge thereof so as to provide an open space below said rear edge, a yieldable inner support crown arranged in a supporting relation with said outer shell and positioned within said shell as said rear edge thereof, a cervix guard comprising a panel having a normal position extending across said rear edge and occupying said space, pin means pivotally mounting opposite ends of said panel on said shell sides, pin means being located forwardly and downwardly from said rear edge so that said panel is movable upwardly from said normal position to a position extending upwardly inside said shell

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at the rear edge thereof displacing a portion of said crown adjacent said shell rear edge, and resilient pad means secured to the inside of said panel.

2. A protective headgear assembly according to claim 1 wherein said pad means is a foam material which extends downwardly and covers the lower edge

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of said panel.

3. A protective headgear assembly according to claim 1 wherein said pad means comprises means forming a plurality of inflatable chamber members extending downwardly below the lower edge of said panel.

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