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COMBINATION HELMET AND FACE MASK

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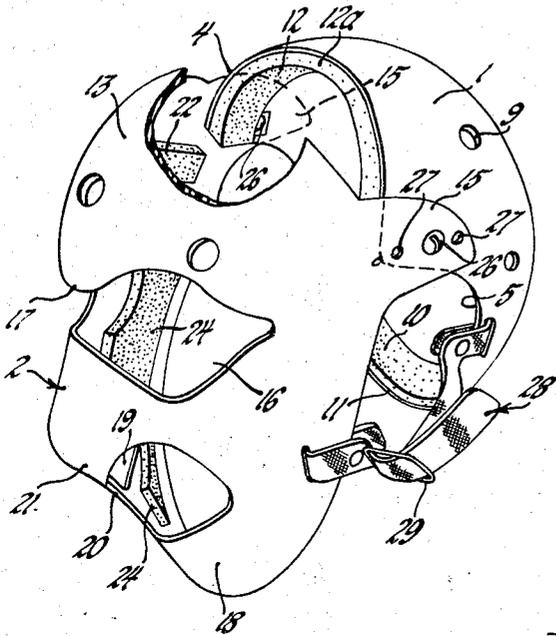


Fig. 1

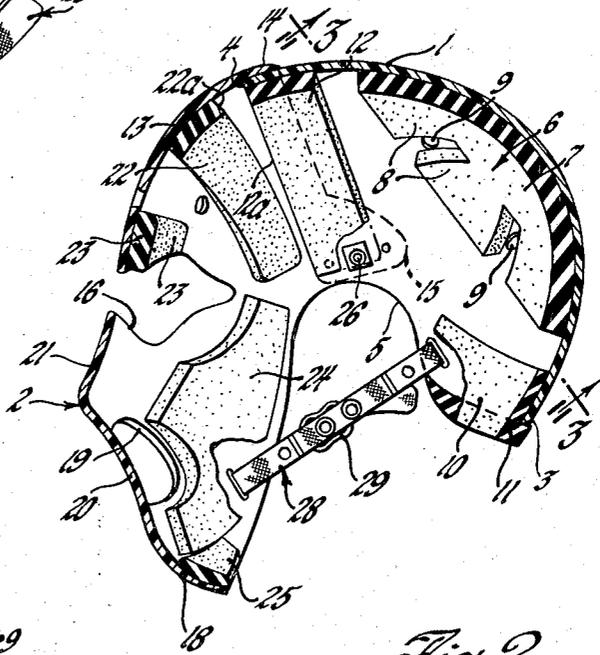


Fig. 2

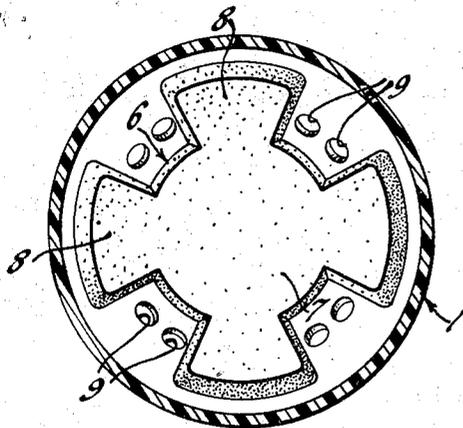


Fig. 3

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ABSTRACT OF THE DISCLOSURE

A protective head covering including two rigid members pivotally connected together wherein one member comprises a shell enveloping the skull from above the forehead to the back of the neck and the other member protects the face by extending from a point overlying the shell to below the chin. Cushion means within both members not only engage the head but also serve to limit the pivotal displacement of the members with respect to one another.

This invention relates generally to improvements in protective head gear, and particularly, to a combined padded helmet and padded face mask especially suitable for use by athletes such as hockey players and the like.

Numerous types of protective headgear have been developed for use by individuals engaged in sporting activities in general, however, in the specific instance of ice hockey for example, the prior known devices fall far short of providing the minimum adequate protection needed by players indulging in this body-bruising sport. In the past, any attempt at providing suitable protection for both the head and face of a player engaged in ice hockey has resulted in a device having far more shortcomings than attributes.

The very nature of the sport of ice hockey dictates that an acceptable protective headgear for athletes engaged in this sport must meet a plurality of qualifications. The fact that the device includes both a crown or shell portion as well as a full face mask portion presents several problems which must be overcome in providing a suitable device. Each portion of the headgear must provide adequate protection for that area of the wearer's skull and face required to be covered. In view of the extremely forceful body contact involved in ice hockey as well as the ever present danger of being struck by a swinging stick or a flying puck, it is imperative that the coextensive portions of the shell and face mask be adequately cushioned to absorb any such punishment delivered thereto to preclude injury to the wearer. The primary objection to prior known forms of face guards utilized by ice hockey players has been the restriction to the vision and breathing of the athlete. This sport is very fast and the player, wearing extremely heavy clothing, is constantly moving about the rink and therefore his rate of respiration is exceedingly high. Likewise, the constantly shifting position of the various players on the two teams as well as the lightning-like speed of the puck necessitates that the player be afforded the clearest possible field of vision without any impairment thereto by the face mask, many of which in the past have cut down on the wearer's peripheral vision. When the player is not on the ice, for example in the penalty box, and it is desired to remove the combined helmet and face mask, ready means must be provided for the easy removal thereof. Another desirable feature in a device according to the present invention is that the combination headgear should be readily adaptable to fit the head of any member of the team. No one single-sized helmet can fit the head of, say a player wearing size 6½ as well as a player whose size is 7½, and at the same time provide the proper fit and protection to both wearers.

Accordingly, one of the primary objects of the present invention is to provide a combination helmet and face

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mask of the padded type and adapted to provide full protection to the skull as well as the face of the wearer.

Another object of the present invention is to provide a combined headgear including a padded shell and a padded face mask including means for pivotally attaching the two sections to one another.

A further object of the present invention is to provide a combination helmet and face mask particularly adapted for use in the sport of ice hockey and including head shell and face mask portions which are adjustably connected to one another to permit the selective assembly thereof in order to accommodate players having differently sized heads.

Still another object of the present invention is to provide a combined headgear including two padded sections adjustably connected to one another to provide full protection for the wearer from a point beneath his chin, over the entire face, top of the head and all the way to the base of the neck.

With these and other objects in view, which will more readily appear as the nature of the invention is better understood, the invention consists of the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawing in which:

FIGURE 1 is a front perspective view, with a portion broken away, illustrating the combination helmet and face mask according to the present invention;

FIGURE 2 is a vertical sectional view taken through the combination helmet and face mask of FIGURE 1;

FIGURE 3 is a sectional view taken along the line 3-3 of FIGURE 2 and illustrating the crown cushion within the top portion of the shell.

Similar reference characters designate corresponding parts throughout the several views of the drawing.

Referring now to the drawings, particularly FIGURE 1, the invention will be seen to comprise a combination protective headgear including a head shell 1 adapted to overlie the top, rear and side portions of the wearer's skull, and a face mask 2 pivotally connected to the shell 1 and constructed in a manner so that when properly worn provides for a continuous protective covering from the top forward portion of the shell 1 down over the wearer's forehead and entire face to a point underlying the chin. As will be most clearly seen in FIGURE 2, the head shell 1 extends rearwardly to a point adjacent the back of the wearer's neck and terminates in a neck rim 3 while the forward frontal rim 4 of the shell is disposed at a point above the wearer's forehead.

Each of the sides of the shell are cut out as at 5 to provide clearance for the athlete's ears. The reason for the ear cut out portions 5 will be quite clear when it is understood that the shell 1 is designed to fit as close to the wearers' head as possible so as to provide a close fit to preclude shifting of the headgear during the rapid maneuvers of the player. This arrangement is unlike that found in other types of headgear such as football helmets wherein the shell extends over and around the ears and is supported on the wearers' head by means of an internal harness. These latter types of helmets, if used by an ice hockey player, would be an extreme hindrance to the player in view of the rapid shifting of the wearer's body and head during the hockey game and the abrupt stopping and starting on the ice, all of which produces a very high degree of inertia which would tend to dislodge the more or less conventional types of helmet from the wearers head. Likewise, a hockey player relies somewhat upon his sense of hearing throughout the game in order to detect an opponent bearing down behind him or to receive verbal signals during the play from his teammates, which

sense of hearing would be impaired if a helmet were worn which extended down over the player's ears.

The head shell 1 is constructed of any suitable high impact resistant material providing a maximum strength-to-weight ratio such as laminated glass fiber. Attached to the inner surface of the shell 1 are a plurality of cushioning elements strategically located to provide for maximum shock protection to the wearer's skull should an impact or blow be delivered to any portion of the shell. A crown cushion 6 is attached to the inner surface of the crown portion of the shell 1 and includes a central portion 7 having a plurality of radiating segments 8 extending therefrom. As shown more clearly in FIGURE 3, a plurality of ventilating holes 9 are provided through the shell 1 between the radiating segments 8.

Mounted within the shell 1 adjacent the neck rim 3 is a posterior cushion 10, the lower edge of which extends downwardly beyond the rim 3 and also rearwardly to completely overlie the lower normally exposed portion of the rim 3 to provide a neck pad 11. Thus, it will be understood should a blow be delivered to the athlete or the headgear which drives the shell 1 rearwardly on the wearer's head, the neck pad 11 would be the portion of the headgear coming in contact with the vital area of the back of the neck rather than the relatively sharp and dangerous rigid neck rim 3 of the shell, thereby precluding any injury to the wearer.

Disposed within the shell 1 adjacent the frontal rim 4 is a shell frontal cushion and stop 12 extending the entire transverse dimension of the shell from one ear cut out portion 5 to the other. Unlike the posterior cushion 10 which extends beyond the neck rim 3, the frontal cushion and stop 12 preferably terminates immediately adjacent the shall frontal rim 4 as illustrated in FIGURE 2 for purposes which will be understood hereinafter.

As previously mentioned, the present protective headgear includes a face mask 2 associated with the head shell 1 and constructed in such manner as to provide, with the shell, continuous uninterrupted protection to the skull and face of the wearer. The mask 2, which may be constructed of the same impact resistant material as the shell 1, is formed with a contour roughly that of the human face, and includes an upper forehead section 13 below the top rim 14 of the mask. The forehead section 13 extends downwardly to a point opposite the eyebrows of the wearer and extends laterally around to each side of the head to provide a pair of mounting wings 15 extending rearwardly beyond the top rim 14 of the mask and adapted to overlie the forward portion of the head shell 1 immediately above the ear cut outs 5. An eyesight area 16 cut out of the mask 2 provides a maximum clear field of vision while the front center portion of the mask extends downwardly from the forehead section 13 to provide a bridge guard 17 adapted to protect the vital underlying area of the wearer's nose at that point on a level with his eyes. The sides of the face mask extend downwardly from a point just forward of the wearer's ears to overlie the sides of the wearer's jaw and continue downwardly to the lowermost portion of the mask whereupon a chin cup 18 is formed to fit beneath the athlete's chin. A sufficiently large mouth opening 19 is formed in the mask so as to prohibit any restriction of the players' relatively high rate of breathing and to also permit the player to issue verbal signals to his teammates during the game. Disposed in the center of the mouth opening 19 is a vertically arranged rib 20 which not only strengthens the mask by interconnecting the nose 21 thereof with the chin cup 18 but, more importantly, protects the players mouth and teeth from any damage by a flying puck or hockey stick.

Several vital areas within the interior of the mask 2 are provided with suitable cushioning elements in order to protect the adjacent underlying portions of the wearer's face. Attached to the inside of the forehead section 13 is a mask frontal cushion and stop member 22 compris-

ing a longitudinal strip transversely disposed inside the forehead section and spaced a substantial distance from the top mask rim 14 as will be clearly seen in the sectional view of FIGURE 2. Extending across and above the eyesight area 16 is a bridge cushion 23 while disposed within both sides of the mask are cheek cushions 24. Also, mounted within the chin cup 18 is a chin cushioning element 25.

All of the above described cushioning elements in both the head shell 1 and face mask 2 are preferably formed of a substantially thick layer of high impact type rubber padding such as Insolite as manufactured by the U.S. Rubber Company. These cushioning or padding elements may be attached to the inner surface of the shell or mask by any suitable means such as by gluing.

Referring to FIGURE 1 it will be seen that the two mounting wings 15 projecting rearwardly from the upper portion of the mask 2 are adapted to be disposed in an overlapping arrangement with the forwardmost portion of the head shell 1, at a point immediately adjacent the ear cut out areas 5. Removably attached to the shell 1 in this area is a pivotal fastening member 26, such as a screw which may be secured to the shell by any suitable means such as a nut, on the inner surface thereof. Adapted to cooperate with the fastener 26 are a plurality of mounting holes 27 disposed through the overlying mounting wings 15 of the mask. In the invention as illustrated in the drawing the intermediate mounting hole is illustrated as receiving the pivotal fastening member 26. It will thus follow that if the fastener were removed from the shell 1 and one or the other of the mounting holes 27 utilized for attaching the mask to the shell then the internal size of the combination helmet and face mask would be reduced or increased, respectively, in order to accommodate the various sized heads of different wearers.

An important feature of the present invention resides in the construction provided therein which permits the ready putting on and removal of the combination headgear while at the same time prohibiting the accidental tearing away of the face mask during the game. As hereinbefore mentioned, the shell frontal cushion and stop member 12 is disposed with its forwardmost longitudinal edge exposed flush with the shell frontal rim 4 in order to provide a shell stop edge 12a. Also, it will be noted that the mask frontal cushion and stop member 22 is disposed within the mask such that its uppermost or limit stop edge 22a is disposed a substantial distance forwardly or below the top mask rim 14 as clearly shown in FIGURE 2. With the foregoing description it will be seen from a review of FIGURE 2, that upwardly swinging or clockwise movement of the face mask 2 will be limited by the abutment of the juxtaposed stop edges 22a within the face mask and 12a within the head shell. During any such pivotal movement about the fastener member 26 the uppermost portion of the face mask 2 adjacent the top rim 14 thereof will at all times be disposed in an overlapping relationship to the shell frontal rim 4 so that a positive continuous protective surface is provided to the head of the wearer. By the proper selection of the mounting holes 27 for assembling the two primary components of the invention it is possible to insure that this overlapping arrangement is achieved and maintained during the wearing of the headgear on any sized player's head.

To maintain as close a sliding fit as possible between the opposed surfaces of the overlapping rims 4 and 14, it will follow that the opening (not shown) through the opposite sides of the shell for receiving the fasteners 26 should be disposed substantially through the center point for the radius forming the curvature of the front portion of the shell in the vicinity of the rim 4, and likewise, the three mounting holes 27 on each of the mounting wings 15 should be disposed as close as possible along a line passing through the center point of the radius forming the curvature of the uppermost portion of the mask immediately adjacent the top rim 14 thereof so that during rela-

tive pivotal movement between the two components of the headgear, the two rims 14 and 4 will describe a pair of constant radius concentric arcs to maintain a substantially fixed relationship between these two overlying portions.

The protective headgear is retained upon the wearer's head by means of an elastic strap assembly generally designated 28, which adjustably and yieldably connects each side of the headgear from a point at the lower portion of the face mask to a point at the lower portion of the head shell. The elastic strap assembly 28, of well-known construction, includes an adjustment buckle 29 intermediate the ends thereof for regulating the tension of the elastic strap dependent upon the desires of the specific wearer.

In putting the headgear on, the player forcibly spreads apart the chin cup portion 18 of the face mask from the neck rim portion 3 of the shell against the resilient force of the strap assemblies 28 in order to insert his head therebetween and after the chin has been fitted above the chin cushion element 25 the pressure may be released so that the strap assemblies 28 will tend to draw together the two components of the headgear to yieldingly draw the plurality of cushioning elements in the head shell 1 downwardly against the skull of the wearer while at the same time drawing the plurality of cushioning elements in the face mask rearwardly to securely engage their juxtaposed areas on the face of the wearer. A properly fitted headgear when in position on the wearer's head may appear as shown in FIGURE 2 wherein it will be seen that the shell frontal rim 4 adequately overlaps the top mask rim 14 to insure the full uninterrupted protective covering from the wearer's chin all the way up his face, back over the head, to the base of the neck. Should the face mask 2 receive an upwardly glancing blow from a flying puck or stick or even by the grasping of the chin cup portion 18 by an opposing player, the clockwise pivotal movement of the mask 2 would be greatly restricted due to the abutting of the two opposed stop edges 22a and 12a on the face mask and head shell, respectively. When these two stop edges are in abutment with one another, it will be seen that any continued clockwise pivotal force directed to the face mask would be transmitted through the abutting stop edges to the head shell 1 so that the shell will absorb this force and assist in resisting any further displacement of the headgear.

It is to be understood that the invention is not limited to the specific features shown, but that the means of construction herein disclosed comprise the preferred form of several modes of putting the invention into effect

and the invention will therefore be understood in any of its forms or modifications within the legitimate and valid scope of the appended claims.

I claim:

1. In a protective head gear, the combination, comprising, a rigid integral shell co-extensive with the skull and having a frontal rim disposed at the top edge of the forehead and a rear neck rim disposed adjacent the back of the neck, a rigid integral face member pivotally attached to said shell and extending from a top rim overlying said shell frontal rim in juxtaposed relationship downwardly to a chin cup beneath the jaw, mounting wings on said face member overlying the lower forward portion of said shell, fastener means through said wings and shell to permit free pivoting about a fixed point of said face member top rim in an arc overlapping and contiguous with said frontal rim, cushioning means within said shell and face member, said cushioning means including a frontal cushion element in said shell disposed with a forward stop edge adjacent said shell frontal rim and a frontal cushion element in said face member disposed with a rearward stop edge positioned forwardly of said face member top rim, whereby said face member may be pivoted rearwardly with respect to said shell about said fastener means an amount limited to abutment of said two stop edges, and an adjustable strap assembly joining the lower portion of said face member to the rear portion of said shell to maintain said cushioning elements in said face member and shell in firm contact with the face and skull, respectively, whereby rigid protective means covers the wearer uninterruptedly from a point below the chin to a point at the base of the skull, regardless of the pivotal relationship of said shell and face member.

2. A protective head gear, according to claim 1, wherein said strap assembly comprises, elastic members normally urging the lower portions of said face member and shell toward one another.

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