ABSTRACT OF THE DISCLOSURE

This protective headgear for protecting the outer ear against physical injury while engaged in sports such as wrestling comprises a resiliently stretchable headpiece with face and neck apertures and pockets over the ear locations for removable ear protectors, e.g., outer rigid plates and interior annular cushions, or one-piece resilient ear pads.

This application is a continuation-in-part of my co-pending application Ser. No. 832,693, filed June 12, 1969.

BACKGROUND OF THE INVENTION

Field of the invention

The present invention relates to protective headgear for sports such as wrestling and water polo. More particularly, it relates to a novel headgear which is primarily designed to protect the outer ears of the wearer against physical injury during hand-to-hand sports contact.

While the present invention will be described in connection with a particular embodiment designed for wrestling, it should be understood that the use of the present invention is not necessarily limited thereto. It can be employed for the protection of the outer ears whenever they are subjected to rough, injury-producing physical contact.

Description of the prior art

Various headgears have been designed to protect the wearer against physical damage to the outer ear, particularly from the squeezing, rubbing or frictional tearing such as might be encountered in wrestling. This protection has been found imperative, particularly in nonprofessional, intercollegiate and scholastic wrestling competition, to avoid the pain, suffering and disfiguring effects associated with damaged ear tissue, such as "cauliflower ears." The rules of the National Collegiate Athletic Association require the use of such protective headgear in all competition beginning with the 1969-1970 season. Illustrative headgear of the prior art are disclosed in Roberts Pat. 2,886,818, Koen Pat. 2,898,596, Helmy Pat. 3,311,921 and Pukish, Jr., Pat. 3,327,316. Many of these prior art protective devices have been quite helpful; but all suffer from one or more shortcomings.

In certain prior art devices, straps with snap fasteners or "fishing hook" type closures are employed. These produce bulges, rather than smooth contact areas and will often snap open during use, leaving the wearer only partially protected. Worse, the user will sometimes discard completely the protective headgear, rather than be bothered with the flapping straps.

Certain prior-art devices have also been found to be heavy, bulky and unattractive in appearance. They sometimes leave the hair of the wearer in an unkempt, awry condition. Many of the prior-art devices are also unsanitary and difficult to clean. They cannot be machine or hand washed and quickly dried.

Some also have been uncomfortable to the wearer, particularly if they are not breathable, that is, not made from a porous material which permits the rapid passage of air and moisture. Such is desirable for the evaporation of perspiration and the cooling and ventilation of the head of the wearer. Such prior-art devices have also been costly and have suffered from a number of other associated disadvantages.

It is, therefore, a general object of the present invention to cope with the problems associated with prior art protective headgears.

It is a specific object of the invention to provide a protective headgear which preferably covers the entire head except for the face and is attractive in appearance and sanitary in use.

It is another object to provide a headgear which protects the outer ears from physical injury and yet is lightweight and comfortable to the wearer and lends itself to ornamental treatment.

It is another object to provide a wrestling head protector which accommodates a number of head sizes and is free of straps, snaps, buckles, slides, tapes, ties, or the like.

It is another object to provide a protective headgear for the ears which can be readily disassembled for washing and quickly dried and reassembled for use.

It is a still further object to provide ear protectors for wrestlers which are inexpensive, attractive, comfortable to wear and permit evaporation of perspiration and cooling and ventilation of the head of the wearer.

These and other objects of the present invention will become apparent as a detailed description proceeds.

SUMMARY OF THE INVENTION

These objects are achieved by a protective headgear which comprises a unitary headpiece of porous fabric with face and neck apertures and which otherwise, preferably, covers the entire head of the wearer. The headpiece has stretchable portions such as elastic tape at the borders of the apertures, preferably only at the neck apertures, and/or is made entirely of a stretchable fabric (with or without elastic tape at the borders) so that it can be resiliently stretched over the head of the wearer, including the chin, and will then conform thereto, resulting in a substantially perfect fit. Internal pockets are provided adjacent the ear locations and these pockets have stretchable openings. A rigid plate, preferably circular and concavely curved so as to overlie the ear of the wearer, is held in the pocket by the natural resiliency of the material. An annular resilient cushion is also inserted so as to surround the ear of the wearer and to cushion peripheral portions of the plate against the head of the wearer. The interfit of the plate and the cushion and the natural resiliency of the material of the surrounding pocket results in a seemingly unitary protective structure.

In an alternative embodiment, a one-piece resilient cushion, e.g., soft rubber, foam rubber, or the like which is concavely contoured to overlie the ear, is substituted for the rigid plate and annular cushion. In still another embodiment the rigid plate may be combined with the onepiece resilient cushion.

Various materials having the requisite strength may be employed so long as they are porous so as to "breathe," are not irritating or otherwise harmful to human skin and are relatively inert to human perspiration. Examples include elasticized cloth, nylon, Dacron, rayon and similar synthetics and various combinations of natural and synthetic fibers. Suitable fabrics may be selected from those already successfully used, for example, in women's foundation garments, e.g., nylon Lyca spandex fabric and nylon Helanca material, that is nylon with mechanically crimped fibers having a spring-like action.

The pockets and openings therein are shaped to receive the rigid plates and hold them in place. The openings may be sized so as to require stretching to permit the
plate to be forced through. The pocket may be formed by a single piece of resilient fabric which is peripherally sewed except for a stretchable opening. Alternatively it may be formed by a duality of preferably overlapping pieces.

The rigid plates may be metal, e.g., aluminum magnesium or the like. They are preferably manufactured from high-impact plastics such as high-impact styrene, high-density polyethylene, polypropylene, rigid nylon, polyvinyl acetate or butyrates copolymers, polycrylates or the like and combinations thereof.

The annular resilient cushion is preferably manufactured from natural or synthetic rubber tubing, such as surgical tubing, which is joined at the ends to form a toroidal ring. Other equivalents such as resilient sponge rubber or polyurethane cushions or tubing or equivalents may also be employed. In all cases, it should be possible to flex the cushion into place through the opening of the pocket while the rigid plate is already in place. Where resilient, it should be sufficiently resistant to compression so that the rigid plate does not impinge against the head of the wearer in normal use. The same, similar or equivalent materials may be employed for the aforementioned one-piece ear protector.

In a preferred embodiment, the cushion is a toroidal ring of rubber tubing which fits into the periphery of the conically-shaped rigid plates so as to secure the combination firmly in each of the pockets. To disassemble, the tubing is first pulled through the opening and then the plate is forced out through the stretched opening.

**BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will be more clearly understood from the following detailed description of a specific embodiment thereof, read in conjunction with the drawings, wherein:

**FIG. 1** is a profile or side elevation view of a model wearing an embodiment of the headgear of the present invention designed for wrestling;

**FIG. 2** is a front elevation view on a reduced scale;

**FIG. 3** is an exploded fragmentary view of the left-ear portion of the headgear;

**FIG. 4** is a fragmentary section view through the left-ear portion of the headgear;

**FIG. 5** is a fragmentary view of the earpiece showing how the annular resilient cushion is removed from or inserted into the ear pocket;

**FIG. 6** is a fragmentary view of the earpiece showing how the rigid plate is forced through the limited stretchable opening of the ear pocket;

**FIG. 7** is a fragmentary view of an alternative embodiment wherein the ear pocket is formed by two overlapping semicircular segments;

**FIG. 8** is an elevation view of the outward-facing side of an alternative ear protector comprising a one-piece soft rubber pad;

**FIG. 9** is an elevation view of the inward-facing side of the embodiment of FIG. 8; and

**FIG. 10** is a section view on line 10—10 of FIG. 8.

**DESCRIPTION OF PREFERRED EMBODIMENTS**

Referring to FIGS 1–5, the protective headgear comprises a unitary fabric headpiece 10 with face and neck apertures at 12 and 14, respectively. In a preferred embodiment, headpiece 10 is made from a porous and stretchable material such as nylon Lyco so that it can be resiliently stretched over the head and chin of the wearer and then conform itself to the shape thereof, as illustrated in FIGS 1 and 2.

To reinforce border portions of the apertures of headpiece 10, tapes 16 and 18 may be affixed thereto, by, for example, conventional stitching. Tapes 16 and 18 may be stretchable or one or both may rely upon the natural resilience of the material of headpiece 10 to conform the periphery of the headpiece adjacent the apertures to the features of the wearer. In a particular embodiment, tape 16 may be nonresilient, whereas tape 18 may be resilient.

By using nonresilient material for tape 16, the face opening is nonstretchable and there is little or no tendency for the headgear to be forced back over the head when stressed.

Ear protectors 20 and 22 protectively cover the ears of the wearer and smoothly protrude from headpiece 10 so as to present minimal interference. As shown in FIGS. 3, 4 and 5, each ear protector comprises a pocket formed by sewing the periphery of generally-circular fabric piece 24 to the inner side of headpiece 10 circumjacent the ear location. Rigid plate 26 and resilient cushion 28 are then inserted into the pocket thus formed. In the illustrated embodiment, rigid plate 26 comprises a con cave, circular plate of high-impact styrene and resilient cushion 28 comprises a toroidal ring formed by joining the ends of natural rubber "surgical" tubing. Resilient cushion 28 interferes into the periphery of rigid plate 26 and effectively locks it in the pocket.

As indicated by the dashed lines in FIGS. 3, 5 and 6, fabric piece 24 is stitched to headpiece 10 throughout its periphery except a portion thereof, e.g., an arc of about 45 to 90°, whereby a limited opening 30 in the pocket is formed. Fabric piece 24 is made of a complementary material, preferably the same material as headpiece 10. It is limited opening 30 which permits the rigid plate 26 and resilient cushion 28 to be removed and reinserted at will.

The procedure for so doing is illustrated in FIGS. 5 and 6. It involves a simple two-step procedure. Resilient cushion 28 is flexed from its normally circular configuration so that it can be readily pulled through opening 30. Plate 26 can then be forced through the opening by distending the opening sufficiently for its passage. The headpiece can then be hounded, quickly dried and reassembled by repeating the above procedure in reverse order, that is, reinsert plate 26 and then cushion 28. To prevent tearing of the pocket when plate 26 is forced through limited opening 30, the borders of the opening may be double stitched or otherwise reinforced.

Rigid plate 26 is preferably centrally apertured to form opening 32. This aids in ventilating and cooling the ear and permits the wearer to hear better.

Referring to FIG. 7, an alternative pocket for the ear protector may be formed by stitching two overlapping semicircular segments 40 and 42 to headpiece 10. The respective straight edges 44 and 46 thereof are hemmed but are not stitched to headpiece 10, whereby offset overlapping openings are formed. Because of the natural resiliency of the material used for segments 40 and 42 which is preferably the same as headpiece 10, the overlapping edge portions 44 and 46 can be pulled open and plate 26 and cushion 28 inserted into the pocket formed thereby. After insertion, the overlapping edge portions return to their overlapped orientation whereby a smooth ear-contacting surface is presented.

Referring to FIGS. 8, 9 and 10, the ear protector may alternatively comprise an overlying, soft, saucer-like pad 50, which may replace both plate 26 and cushion 28 in the pocket formed by fabric piece 24 in FIGS. 1–6, or overlapping fabric pieces 40 and 42 in FIG. 7. Alternatively, pad 50 may be substituted for cushion 28 in combination with plate 26. Manifestly, either cushion 28 or pad 50 may be adhered to or otherwise integrally formed with plate 26.

Pad 50, like plate 26, is preferably centrally apertured to form opening 52. The inward-facing peripheral surface 54 is substantially flat to provide a smooth surface. The inward-facing inner portion is concavely contoured to overlap the ear and to avoid undue pressure against the ear even when subjected to the normal external forces encountered in competitive wrestling.
It is apparent that the design lends itself to decorative treatment. This can be readily achieved by, for example, making headpiece 10 from one solid color and using a different color for tapes 16 and 18. Such colors can be keyed to the remainder of the wrestler's uniform. Alternatively, the material of headpiece 10 forming the exterior portion of the ear protector pocket may be colored differently from the remainder. Initials or emblems may be added, e.g., by embroidery, dyeing techniques or equivalents.

Because headpiece 10 substantially covers the head, it keeps the hair of the wearer in place and covers sideburns and other facial hair. Because headpiece 10 and fabric piece 24 are made of porous, rinsable material which quickly dries, the headpiece can be laundered after each use. Plate 26 and cushion 28, or one-piece pad 50, can be similarly rinsed and promptly reassembled into headpiece 10, thus further enhancing sanitary conditions.

From the above description it is apparent that the objects of the present invention have been achieved. While only certain embodiments have been illustrated, many alternative modifications will be apparent from the above description to those skilled in the art. These and other alternatives are considered within the spirit and scope of the present invention, and coverage thereof is intended by this application.

Having described the invention, what is claimed is:

1. Protective headgear for sports comprising:
   (a) a unitary head-encompassing piece of yieldable porous fabric with a face aperture and a neck aperture spaced therefrom, said neck aperture being resiliently stretchable to permit the head and chin of the wearer to pass therethrough, the portion of said piece intermediate said apertures being adapted to resiliently cradle and substantially conform to the chin of the wearer when said headgear is being worn;
   (b) pockets in said headgear adjacent ear locations, said pockets having limited stretchable openings; and
   (c) apertured, peripherally cushioned ear protectors removably disposed within said pockets, said protectors being shaped to overlay in substantially spaced relation the ears of the wearer, the peripheral cushion of each protector being adapted to resiliently engage the portion of the head of the wearer circumjacent the ear when said piece is in head-encompassing position.

2. The headgear of claim 1 wherein said unitary headpiece is peripherally bound with elastic tape adjacent the neck aperture and with inelastic tape adjacent the face aperture.

3. The headgear of claim 1 wherein the porous fabric of said headpiece and said pockets comprises stretchable nylon.

4. The headgear of claim 1 wherein each ear protector comprises a rigid plate and an annular cushion of resilient material disposed inwardly of the rigid plate and engaging the periphery of the latter and conforming substantially to the configuration of said plate periphery.

5. The headgear of claim 4 wherein each rigid plate has a concave inner surface positionable adjacent the ear of the wearer.

6. The headgear of claim 4 wherein each rigid plate comprises high impact plastic.

7. The headgear of claim 4 wherein said cushion comprises a toroidal-shaped ring of hollow resilient rubber tubing.

8. The headgear of claim 1 wherein said pockets are formed by overlapping semicircular segments.

9. The headgear of claim 1 wherein said pocket openings are disposed intermediate the ear protectors and the head of the wearer when said headgear is being worn.

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JAMES R. BOLER, Primary Examiner

U.S. Cl. X.R.

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