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PROTECTIVE HEADGEAR AND HEADGEAR LINING

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2 Sheets-Sheet 1

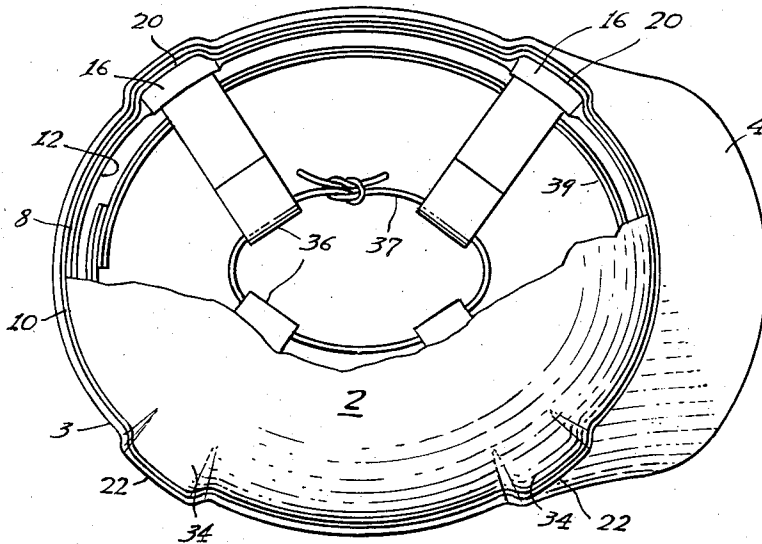


Fig. 1.

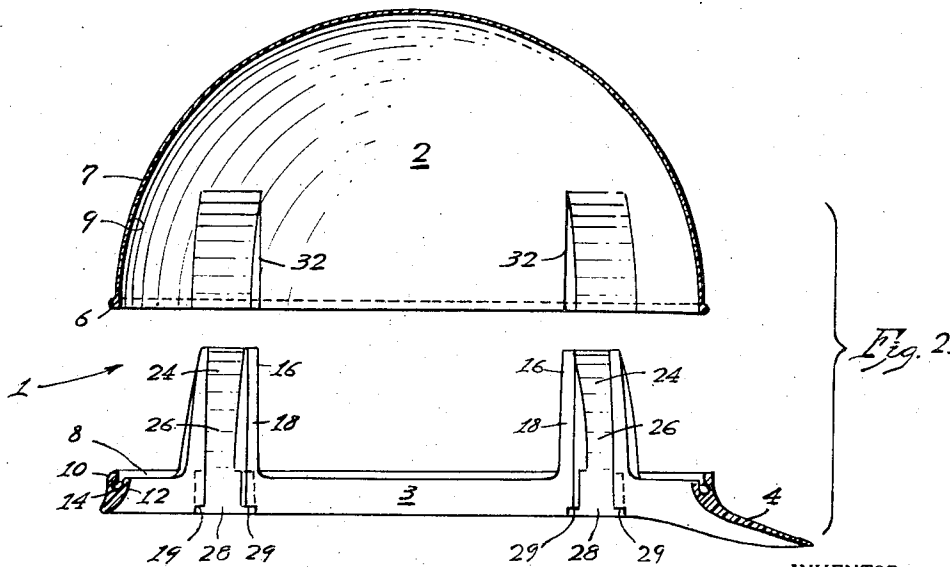


Fig. 2.

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Fig. 3.

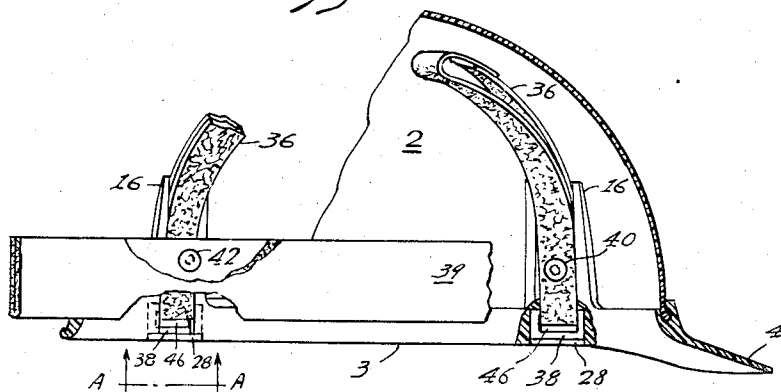


Fig. 4.

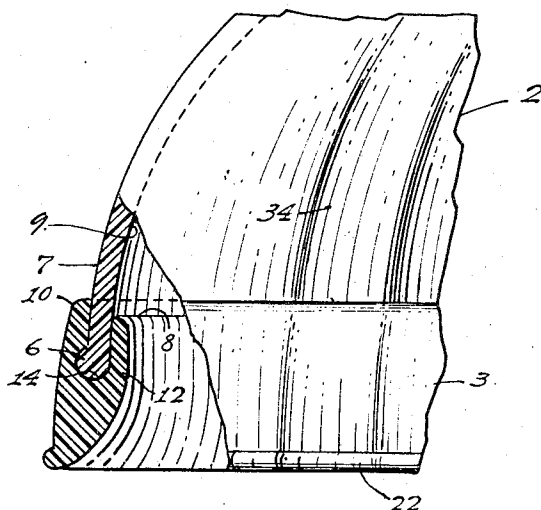
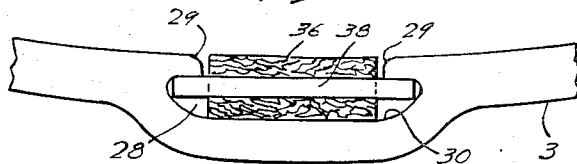


Fig. 5.

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PROTECTIVE HEADGEAR AND HEADGEAR LINING

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7 Claims. (Cl. 2-3)

This invention relates to protective headgear of the type generally used by miners, construction workers, firemen and others employed in related industrial fields where head protection is required, and more particularly, to headgear having a headgear lining and made in two parts and formed of a rigid and/or semirigid materials. This application is a continuation-in-part of application Serial No. 468,395, filed November 12, 1954, and entitled "Protective Headgear."

Generally, the existing practice for making protective headgear, with or without headgear lining attachment, is to fabricate the headgear in one piece. This type of manufacture has proved very satisfactory in most cases. Such headgear and manner of fabrication, however, present disadvantages in instances where it is desired that varied parts of the headgear contain different physical and chemical properties; where functional requirements are different for separate parts of the headgear, regardless of whether the aforesaid properties differ or are the same; where it is desired that the headgear dies be simple and inexpensive; where greater selection in combination of fabrication processes is wanted; and where multicoloring of parts is contemplated. Accordingly, it is a general object of this invention to overcome the above-mentioned disadvantages.

As is well known in the art, the one-piece headgear is normally molded or stamped between a pair of complementary dies, whether the headgear is of the hat type which includes a short brim and visor, or of the helmet type which comprises a full protective brim. Headgear lining suspensions are either, for example, integrally molded along with the headgear proper, separately molded to the headgear, or separately attached to the headgear.

In the case of varying the physical and/or chemical properties of separate parts of the headgear, the one-piece headgear fabrication method obviously will not produce the desired construction since such manufacturing procedure requires that the headgear material for the complete structure be the same throughout its entirety. That is, where, for example, there is a definite strength requirement for the headgear crown, suitable material is chosen to meet this requirement; and, of necessity in the one-piece construction, the remaining portions of the headgear, such as the brim and headgear lining suspensions, are made from the same material. Accordingly, the brim and lining suspensions have the same physical and/or chemical characteristics as the crown, whether such requirements are necessary or not. It is an object of this invention to provide a headgear of more than one part and constructed for use with a headgear lining, which parts are capable of having different physical and chemical properties.

Concerning the functional requirements of headgear, it is at times desirable to provide a headgear effective for use by the wearer when performing different operations, whether related or unrelated, and which operations require

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modified forms of head protection. For example, a particular operation may require the use of the complete headgear comprising the crown, brim, and lining. On the other hand, it may be desirable to use the brim and lining separately from the crown for other and different operations. By providing a headgear having separable parts, it is not only possible to accomplish these results, but is also feasible, when replacement is necessary, to interchange new parts for the old without the necessity of discarding the complete headgear. A further object of this invention is to provide a divisible headgear, including a headgear lining and having parts susceptible to different uses and separate replacement.

As to the simplification of headgear dies and greater selection of fabrication processes, producing the headgear in parts makes these advantageous results possible. It is readily seen that the usual headgear having numerous compound curves and small projections, especially at the lining suspension points, requires complex-shaped dies when fabricating the headgear in one piece. Conversely, when the headgear is made in more than one piece, the die for each piece may be simplified. Also, more specifically in the case of plastic or plastic reinforced headgear, it is possible to manufacture one part of the headgear by selecting one of several types of molding processes and making the other part or parts of the headgear by choosing a different process. Further, when the dies are simplified, the flow of headgear material can be predicted and can be easily guided into those small areas which normally resist proper flow of material. Accordingly, it is a further object to provide a headgear having lining suspensions which may be made structurally correct and made more simply, easily, and inexpensively.

A still further object is to provide a divisible headgear including headgear lining suspensions and having parts which are quickly and easily assembled with a positive connection.

Another object is to provide a divisible headgear having a headgear lining connected thereto in a manner whereby the lining is securely attached to the headgear and easily detachable therefrom.

Still further objects are to provide a headgear which can be tinted in a manner to achieve definite separation of different colors; which comprises two parts; which contains parts that are securely assembled and quickly and easily disassembled; which contains a headgear lining detachably secured to the brim of the headgear; and which contains lining suspensions and a headgear lining co-operating in a manner whereby the inner surface of the headgear is free of pressure points.

The protective headgear of this invention is composed of two basic units detachably connected together, one unit forming a crown and the other unit taking the form of a brim or annulus comprising upstanding slotted lining suspensions. The crown includes a bead integrally molded around the bottom edge thereof, and the brim includes a visor and comprises a circumferential groove complimentary to the bead on the crown for receiving and seating the bead to thereby attach the crown and brim together. The bead and groove are so constructed relative to each other whereby the crown may be snapped into the brim for locking the parts together by positive connection. The connection between the units is such that they may be conveniently disengaged when such is desired. The groove is defined by an inner leg portion having integral upstanding lining suspensions extending vertically from the bottom of the brim. The crown of the headgear comprises upwardly extending channels receiving the upstanding suspensions when the crown is assembled with the brim to present an internal headgear surface free of projections and pressure points. The

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headgear lining comprises cradle straps adjustably attached by a lace at the top and attached to a sweatband by snap fasteners. The lower portions of the cradle straps carry mounting clips for insertion into the slots of the lining suspensions. The cradle straps and clips are so arranged within the slots whereby portions of the cradle straps frictionally secure the clips within the slots.

Other objects and advantages will become apparent from the following detailed description and annexed drawings in which:

Fig. 1 is a plan view of the headgear, looking down on top of the crown, with parts broken away;

Fig. 2 shows an exploded vertical sectional view of the crown and brim of the headgear;

Fig. 3 is a fragmentary vertical sectional view of the assembled headgear and headgear lining with parts broken away;

Fig. 4 is an enlarged plan view of a portion of the headgear brim, looking in the direction of arrows A—A in Fig. 3, showing a lining suspension and the manner in which it is attached within the slot; and

Fig. 5 is an enlarged fragmentary elevational view, with parts in section, showing the connection between the crown and brim.

This invention, although not to be limited thereto, is most particularly concerned with protective headgear composed of nonmetallic materials of the plastic or plastic-reinforced types, which, when molded, produce a rigid and/or semirigid blow-resistant headgear. The specific material may be chosen from the numerous compositions well known in the art and forms no part of the instant invention except as may be clearly delineated hereinafter.

Referring now to the drawings, protective headgear 1 is shown as comprising two units, a crown 2 and brim or annulus 3. Brim 3 includes a visor 4 and, in this form, produces a cap-type headgear. It is to be clearly understood, however, that this invention is not limited to this type of headgear, and the term "brim" refers to all styles of protective headgear having various types of brims. Crown 2 comprises a continuous peripheral curved bead 6 integrally molded at and forming the lowermost edge of the crown. Brim 3 comprises, along its upper edge, a complementary and continuous groove or channel 8, similar to a keyhole slot, formed by an outer annular leg 10, an inner annular leg 12, and arcuate seat 14. The open end of groove 8 is constructed to receive bead 6, and upon movement of the latter downwardly, legs 10 and 12 spread, or expand, permitting positioning of the bead on seat 14 for interlocking engagement of the crown 2 and brim 3. When the crown 2 and brim 3 are thus assembled, leg 10 extends circumferentially around the outer surface 7 of crown 2 and the inner leg 12 extends similarly around the inner surface 9 of the crown.

Inner leg 12 comprises four (only two shown) slightly forwardly curved upstanding portions 16, each having an inner surface 18 flush with the inner surface of leg 12. The outer surface of leg 12 adjacent portions 16 and partially defining groove 8 is bulged outwardly to form ribs 20. Also, leg 10 is bulged outwardly to form ribs 22 at points adjacent ribs 20 maintaining the opening of groove 8 equal throughout the circumference of brim 3. Leg 12, with its upstanding portions 16, is slotted to form inverted T-shaped slots 24, each comprising a vertical leg 26 and a horizontal crossbar 28 to provide headgear lining suspensions. Each crossbar 28 is formed by inner wall portions 29 and an outer wall portion 30.

Crown 2 comprises circumferentially spaced vertically extending channels 32 formed on inner surface 9 and defining ribs 34 on outer surface 7. Channels 32 are constructed and arranged to receive upstanding portions 16 in a manner whereby the inner surfaces 18 of portions 16 are coplanar with inner surface 9 of crown 2 to present a surface free of inwardly extending projections when the crown is assembled with the brim.

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The assembly and disassembly of the crown and brim should now be readily apparent. Since bead 6 and groove 8 are arranged complementary to each other and channels 32 are disposed to receive portions 16, it is necessary only to press crown 2 with its integrally molded bead 6 downwardly into groove 8 of brim 3. As the bead passes through the groove, legs 10 and 12 will spread slightly until the bead has been seated on seat 14 in the groove. When the bead is thus seated, legs 10 and 12 close or contract to their original position, locking the crown and brim portions together. Simultaneously, with the reception of the bead by the groove, portions 16 are received by channels 32. Conversely, when disassembling the headgear, it is necessary only to apply a convenient amount of pressure to spread legs 10 and 12, releasing the crown from the brim.

Referring particularly to Figs. 1, 3 and 4, it is seen that the headgear lining comprises four cradle straps 36 having their upper ends adjustably joined by a lace 37 and their lower ends detachably connected to a circumferentially adjustable sweatband 39 and looped through flat mounting clips 38. Sweatband 39 circumscribes headgear 1 and is folded upon itself, the inner fold forming a smooth head engaging portion and the outer fold providing a cradle strap mounting portion. Each cradle strap 36 carries the male portion 40 of a snap fastener detachably engageable with the female portion 42 secured to the outer fold of sweatband 39. Each clip 38 is rectangular in shape and forms a rectangular opening 46 through which a cradle strap 36 is looped. The ends of each cradle strap 36 are attached by stitches, rivets, or the like, and each strap (Fig. 3) is of a width which can easily be received by a leg 26 of a slot 24. Noting Fig. 4, each crossbar 28 is of a depth, defined between walls 29 and 30, sufficient to tightly accommodate the thickness of clip 38 and the thickness of strap 36. When a clip 38 is inserted upwardly into its respective slot 24, the portion of strap 36 between clip 38 and wall 30 of crossbar 28 provides a means for pressing clip 38 against wall portions 29 to tightly and frictionally secure the clip in the slot. It will be noted that clips 38 are arranged in slots 24 in a manner whereby a blow on crown 2 produces a force, the direction of which is opposite to the force required to insert the clips in the slots to prevent disengagement of the lining when the headgear is bumped. In order to remove the clips from the slots, it is necessary merely to overcome the frictional resistance supplied by the strap and clip within the slot.

In most cases, crown 2 will be made from a rigid material which is highly resistant to impact to protect the head of the wearer from falling and propelled objects. Due to the manner of locking crown 2 to brim 3 by spreading legs 10 and 12, the material selected for the brim must contain a certain degree of resilience to accomplish the desired result. This required physical property, however, is the only limitation placed on the selection of materials for the crown and brim. Clips 38 may be fabricated from metallic or non-metallic materials. The intended use of the headgear units will determine, of course, what other physical and chemical qualities are desirable for fabrication of the headgear and lining.

From the above description, it should be clear that the novel headgear and headgear lining construction permits fabrication of the crown and brim, including the lining suspensions, in separate and, consequently, simple molds. The simplicity of the molds results in less expensive fabrication costs and permits greater accuracy in shaping the finished product. Also, because of this invention, the physical and chemical properties of the headgear units and headgear lining may be varied according to the intended use of each unit, taken separately or combined. It is possible to interchange the crown with various brims, such as those forming a cap, as illustrated, forming a full-brim helmet, and forming other brims, as, for ex-

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ample, are used in various hats, caps, and firemen's helmets. Furthermore, various methods of molding component parts may be employed, such as compression molding one part of the headgear and injection molding for the other part of the headgear in the case of plastic materials. Also, if desired, metallic materials may be used for one unit, while making the other unit out of a nonmetallic material. In addition, provision of a two-unit headgear greatly enhances the commercial value of this product since the crown may be tinted with one color and the brim unit may be tinted with another color, thus providing a clear demarcation between colors and permitting a wide selection of colors by the user of the headgear. This invention provides a practical means for incorporating efficient integral lining suspensions in a headgear and provides a simple yet positive connection between suspensions and lining.

Having explained the principle of the present invention and having illustrated and described what is considered to be the best embodiment, it is to be understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. A protective headgear comprising a crown and a brim detachably connected together, said crown having circumferentially disposed channels extending vertically from the edge of the crown, said brim having slotted upstanding lining suspensions received by said channels and lining elements received by the slots in said suspensions.

2. A protective headgear comprising a crown having a bead forming its lower edge, a brim having a groove formed along its upper edge receiving said bead for detachably connecting said crown and brim together, said groove being defined by an inner leg portion and an outer leg portion, said crown having circumferentially disposed channels extending vertically from said lower edge, and said inner leg portion having slotted upstanding lining suspensions received by said channels.

3. A protective headgear comprising a crown having a bead forming its lower edge, a brim having a groove formed along its upper edge receiving said bead for detachably connecting said crown and brim together, said groove being defined by an inner leg portion and an outer leg portion, said crown having circumferentially disposed channels extending vertically from said lower edge, said inner leg portion comprising upstanding lining suspensions complementary to and received by said channels, each of said suspensions having an inverted T-shaped slot formed therein having inner and outer walls, lining mounting means releasably connected to said suspensions, said mounting means comprising cradle straps and a clip connected to each strap, each clip and a portion of its connected strap positioned within one of the inverted T-

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shaped slots, and the combined thickness of each clip and connected strap portion being greater than the distance between said inner and outer walls to tightly dispose the clip within the slot.

4. A protective headgear comprising lining suspensions, each of said suspensions having an inverted T-shaped slot formed therein having inner and outer walls, lining mounting means releasably connected to said suspensions, said mounting means comprising cradle straps and a clip connected to each strap, each clip and a portion of its connected strap positioned within one of the inverted T-shaped slots, and the combined thickness of each clip and connected strap portion being greater than the distance between said inner and outer walls to tightly dispose the clip within the slot.

5. A protective headgear comprising a crown and a brim detachably connected together, said crown having circumferentially disposed channels extending vertically from the edge of the crown, said brim having upstanding lining suspensions received by said channels, and lining elements supported by said suspensions.

6. A protective headgear comprising lining suspensions, each of said suspensions having a slot formed therein having inner and outer walls, lining mounting means each removably inserted freely into one of said slots, lining supporting means disposed between each of said mounting means and at least one of said walls of each slot, and the combined thickness of each mounting means and supporting means being greater than the distance between each of said walls for frictionally securing said mounting means in said slots.

7. A protective headgear comprising lining suspensions, each of said suspensions having a slot formed therein having inner and outer walls, lining mounting means releasably connected to said suspensions, said mounting means comprising cradle straps and a clip connected to each strap, each clip and a portion of its connected strap positioned within one of the slots, and the combined thickness of each clip and connected strap portion being greater than the distance between said inner and outer walls to tightly dispose the clip within the slot.

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