Jan. 27, 1959 J. R. FISHER 2,870,445

PROTECTIVE HEADGEAR AND LINING SUSPENSIONS

Filed Oct. 28, 1954 2 Sheets-Sheet 1

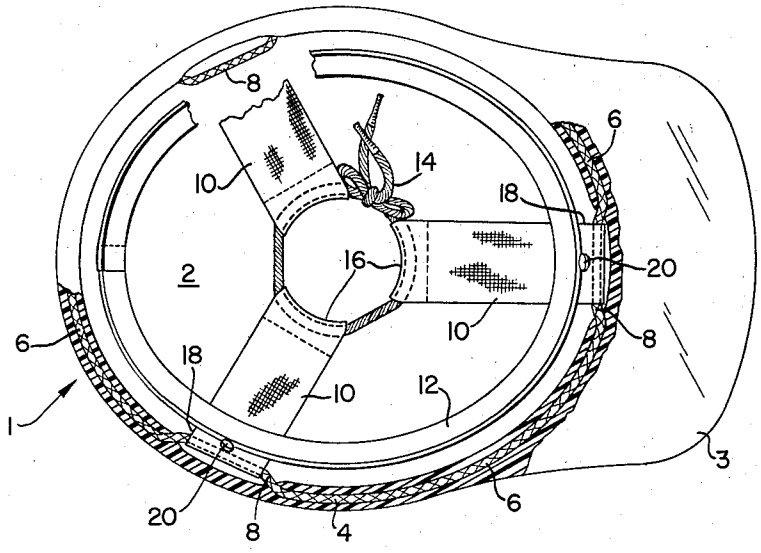


Fig. 1

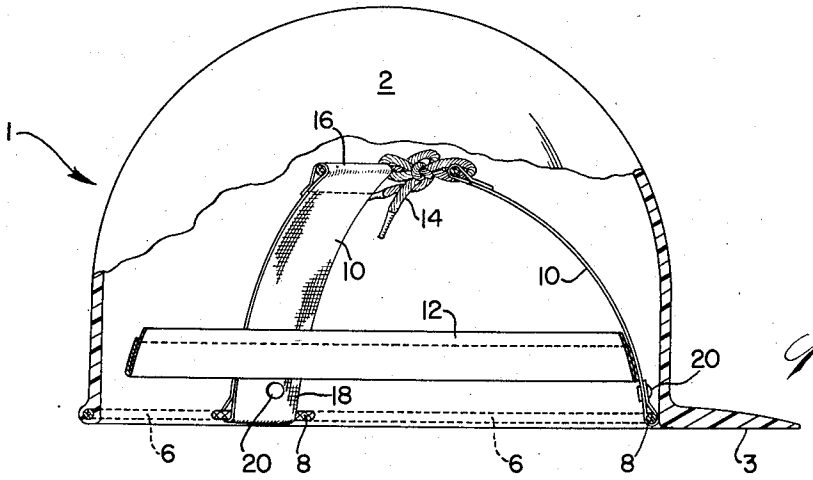


Fig. 2

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PROTECTIVE HEADGEAR AND LINING SUSPENSIONS

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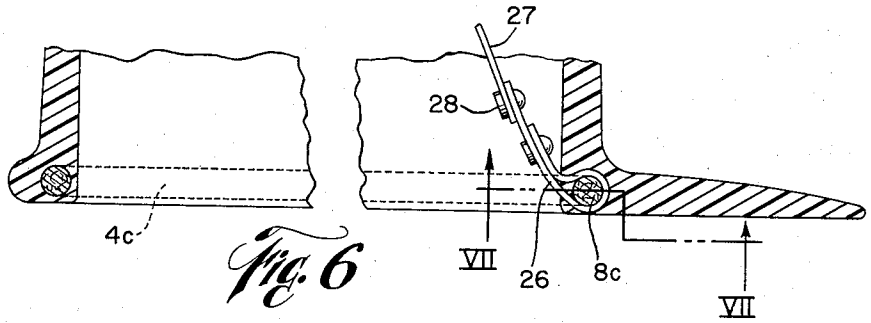


Fig. 6

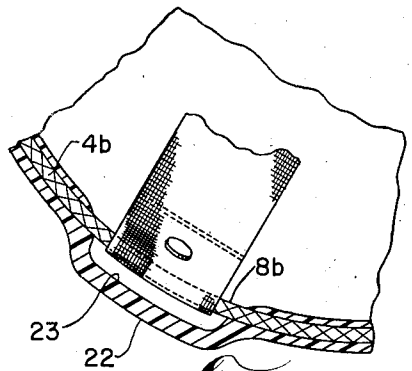


Fig. 5

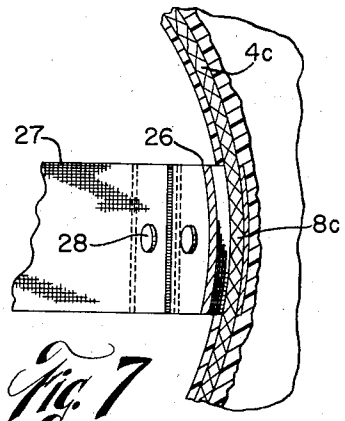


Fig. 7

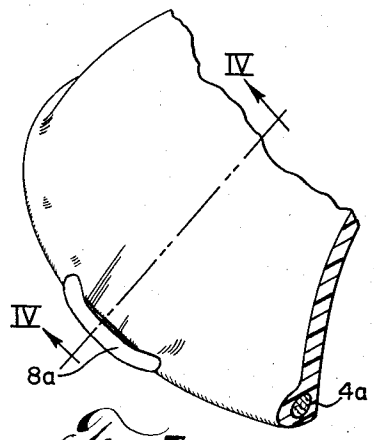


Fig. 3

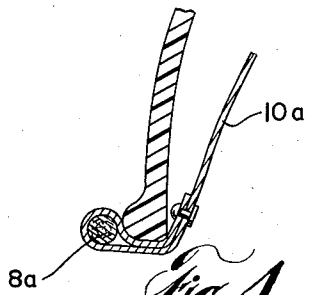


Fig. 4

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PROTECTIVE HEADGEAR AND LINING SUSPENSIONS

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2 Claims. (Cl. 2—3)

This invention relates to protective headgear and more particularly to protective headgear having improved lining suspensions for attaching a headgear lining.

It is among the objects of this invention to provide a headgear which is constructed in a manner to improve protection to the head of the wearer from injury, as from falling objects, and the like, and contact with exposed electrical wiring. It is a further object to provide a headgear with improved lining suspension means so constructed as to minimize injury to the head when the headgear receives an external blow. A still further object is to provide a headgear lining suspension means which may be inexpensively and easily fabricated and secured to the headgear, which requires a minimum number of parts, and which facilitates lining attachment.

In accordance with this invention, the headgear is provided with lining suspensions in the form of a cord secured to the crown of the headgear by molding or adhering portions of the cord to the crown. This provides cord mounting portions apart from the crown for attaching the lining. The lining comprises the usual cradle straps, adjustable sweatband and cradle strap adjustment lace, and the cradle straps are overlapped at each of their ends for attachment to the mounting portions and adjustment lace, respectively. The cradle straps are provided with disengageable fasteners in order that the lining, in its entirety, may be easily removed from the mounting portions by merely detaching the end of the cradle straps. In another embodiment of the invention, the headgear is provided with a cord embedded along its entire length within the crown. Spaced lining attaching means are looped around the cord and molded to the crown. Cradle straps are detachably connected to the spaced attaching means.

Other objects and advantages will be apparent from the foregoing description and annexed drawings in which:

Fig. 1 is a bottom view of the headgear with portions broken away and in section to show the lining suspension means;

Fig. 2 is a vertical elevation with parts broken away and in section;

Fig. 3 shows a fragmentary segment of the headgear illustrating a modified form of the lining suspensions;

Fig. 4 is a view taken on line IV—IV of Fig. 3 and showing attachment of a cradle strap;

Fig. 5 is a fragmentary horizontal section showing a still further modified headgear construction;

Fig. 6 is a fragmentary vertical sectional view of another form of attaching the headgear lining; and

Fig. 7 is a fragmentary view taken on line VII—VII of Fig. 6.

Referring to Figs. 1 and 2 of the drawings, the protective headgear is shown in the form of a cap and is of the type generally worn for head protection by construction workers, miners, and the like. However, this invention is not limited to any particular type of protective headgear as it is obvious that it is equally applicable to protective

hats, military and sun helmets, and other such safety headwear.

The cap 1 comprises the usual crown 2 and visor 3. The cap may be fabricated by any of the well-known methods, such as compression, injection, or transfer molding as in the case of plastic or plastic reinforced headgear, or may be die stamped as in the case of metallic headgear. This invention is most particularly concerned with providing suspension means in headgears that are molded from plastic and plastic reinforced materials and will be so hereinafter described. The headgear lining suspension means is shown in the form of a cord 4, molded or adhered to the crown 2 to provide means for attaching a headgear lining to the cap. It should be understood that the term cord is used broadly and may take the form, for example, of a braided rope, a filled braided sleeving, a woven webbing, a knitted tubular construction, a twisted cord or extruded strip or rod. The cord may be made of metallic or nonmetallic materials that possess required strength and flexibility characteristics. Cord 4 may be either molded or embedded into the crown during the molding of the cap by permitting the plastic to flow over part of the cord, or the cord may contain, in part, a plastic binder which combines with the plastic of the cap during the molding process, or the cord may be attached to the already molded cap by partially coating the rope with an adhesive for bonding the rope to the crown. Accordingly, the term molded is used to include any of these forms of bonding the cord to the cap. As may be particularly noted in Fig. 1, cord 4 circumscribes the lower part of crown 2 and includes spaced portions 6 molded to the inner surface of the crown, leaving mounting portions 8 free of the crown for attaching web cradle straps 10. Only three mounting portions 8 and cradle straps 10 are shown, but it is readily apparent that a more or less number may be selected. In addition to cradle straps 10, the lining comprises a conventional adjustable sweatband 12 and cradle strap adjustment lace or rope 14. One end 16 of each cradle strap 10 is overlapped and secured as by stitching to provide a loop for the lace 14, and the other end 18 of each cradle strap is overlapped and secured by a disengageable snap fastener 20 to provide a loop for a mounting portion 8. In order to attach or remove the cradle straps from the cord, it is only necessary to fasten or disengage the fasteners 20. The sweatband 12 may either be detachably or permanently secured to the cradle straps by any of the well-known practices in the art, and if desired, may be associated with fasteners 20 to be secured to the straps in this manner.

By forming lining suspensions and attaching the lining to the suspensions in the manner described above, a headgear is provided having an internal surface free of rigid projecting blow transmitting elements dangerous to the head of the wearer. Also, the tenacious bond between the cord and crown provides a very durable headgear.

It should be clear from the foregoing that a very inexpensively and easily fabricated suspension means is provided which contains required strength characteristics under normal or adverse conditions for supporting the cap on the head of the wearer by the lining. The flexibility of mounting portions 8 cushions the head of the wearer when the cap receives an external blow since these portions will merely bend against the cap when such a blow occurs. Furthermore, this improved construction, in the case of a nonmetallic cap and cord, provides a protective headgear with ultimate dielectric qualities without lessening the strength characteristics of the headgear. In fact, the portions of the cord molded to the crown will increase the rigidity and strength of the headgear.

Figures 3 and 4 show fragmentary segments of a modified cap having a cord 4*a* molded into the outside surface of the cap to form a mounting portion 8*a* for attaching a detachable cradle strap 10*a*. In this modified form, the

end of the cradle strap 10*a* is passed beneath the bottom edge of the cap and passed around mounting portion 8*a*. The remaining construction of the cap and lining not shown is the same as shown in Figs. 1 and 2. By this manner of construction and attachment, the suspension means is limited to the outside surface of the cap to further protect the head of the wearer from any internal projecting elements which may transmit impact forces to the head when the cap is struck.

Referring now to Fig. 5, which shows a segment of a cap similar to the view in Fig. 1, it is seen that the crown is formed with an integrally molded external rib 22 forming a concavity or indentation 23 with respect to the remaining internal surface of the crown for the purpose of providing a space between the crown and mounting portion 8*b* of cord 4*b*. The number of ribs formed will be equal to the number of suspension points selected. By modifying the cap in this manner, the cord 4*b* may be molded into the cap to span indentation 23 and need not be distorted when attached to the lining since the space between the rib 22 and mounting portion 8*b* of the cord is sufficient to conveniently permit a cradle strap to be looped around the portion 8*b*. It may be noted that this construction has good dielectric qualities and produces a relatively unobstructed internal surface for the cap to protect the head. Also, should it be desired that a metallic rod be employed as the suspension means, no bending of the rod would be necessary to provide mounting portions for the cradle straps.

The modified construction illustrated in Figs. 6 and 7 shows a cap having a cord 4*c* embedded in or bonded to the inner surface of the cap around its entire circumference and a cradle strap attachment or attaching means 26 looped around mounting portion 8*c* of cord 4*c* and molded into the cap along with the cord. The attachment 26 may be made, for example, from cradle strap webbing and the like. Prior to the molding or bonding process, attachment 26 would be looped around portion 8*c* and riveted or stitched together. The lower end of a cradle strap 27 can then be secured to attachment 26 by a detachable fastener 28. This type of construction increases the strength of the lining suspensions and assures rigidity of the headgear throughout its circumference.

As has been mentioned in the description of the first modified form, the construction of the cap and lining not specifically described or shown in Figs. 5, 6 and 7 is the same as that disclosed relative to Figs. 1 and 2.

Although the above invention has been described as including a cord which is a continuous member, it is obvious that discontinuous portions of the cord may be employed if desired, and such a construction is considered within the scope of this invention.

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 blow-resistant crown having a substantially smooth inner surface, spaced indentations formed along said inner surface, a lining mounting cord molded between the inner and outer surfaces of said crown and having portions extending across said indentations, and said portions being spaced from the walls of said indentations and disposed inwardly from said inner surface of the crown, whereby an air space is provided outwardly of said portions and said inner surface being unobstructed by said portions.

2. The protective headgear of claim 1, and said crown and cord being formed of electrically nonconductive material.

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