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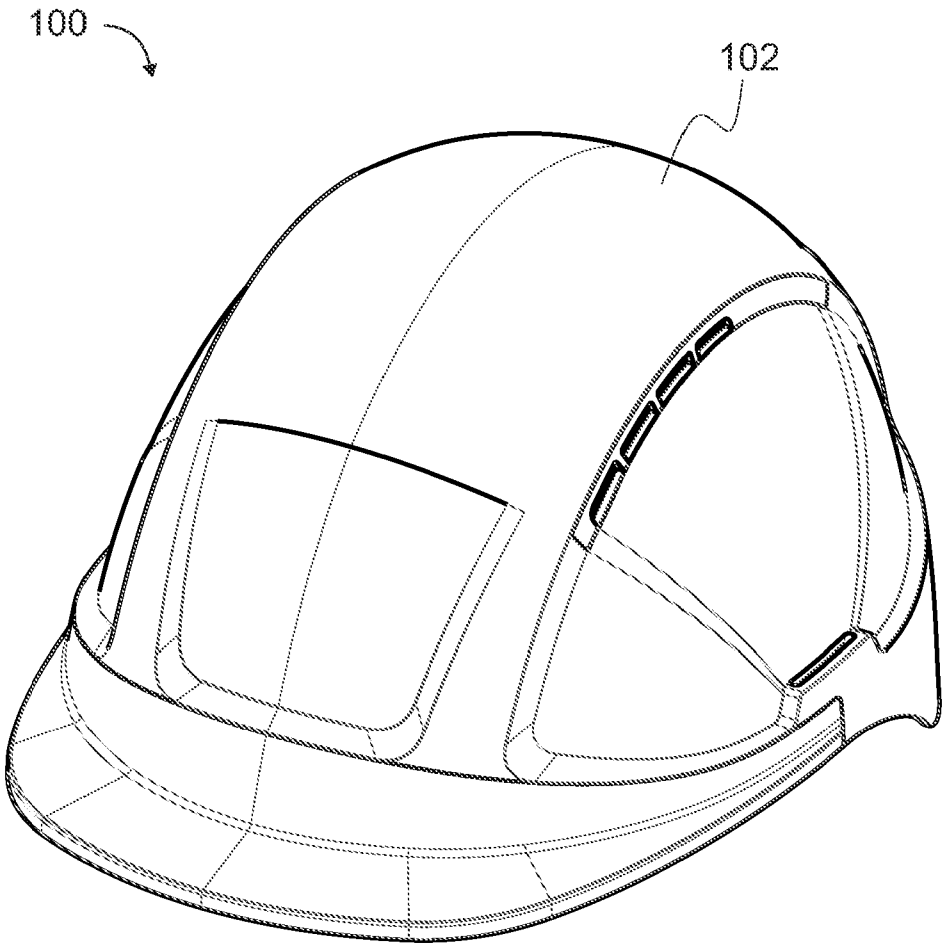

FIG. 1

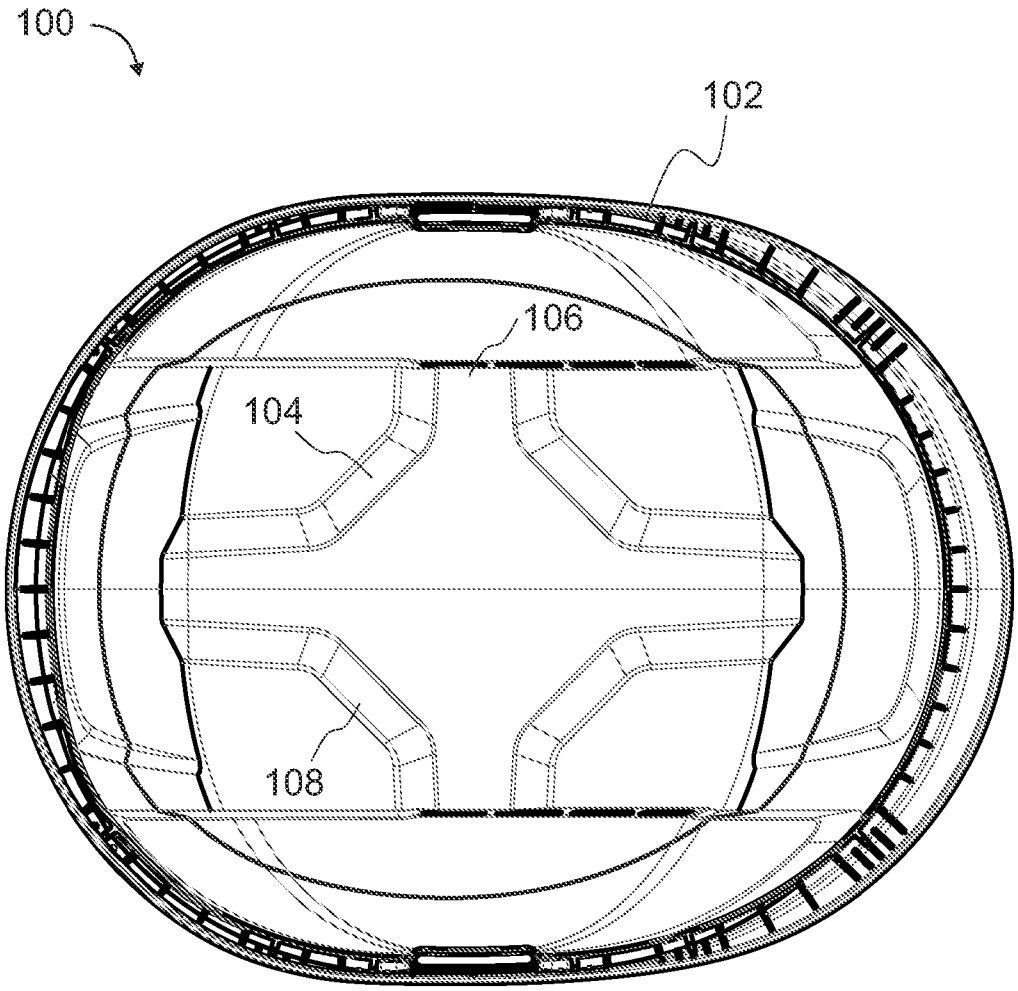

FIG. 2

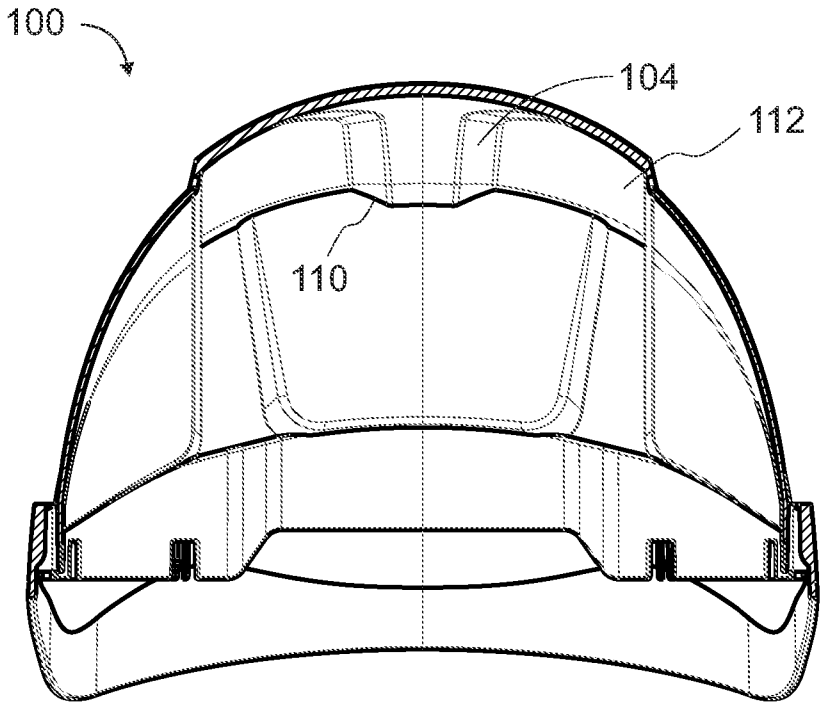

FIG. 3

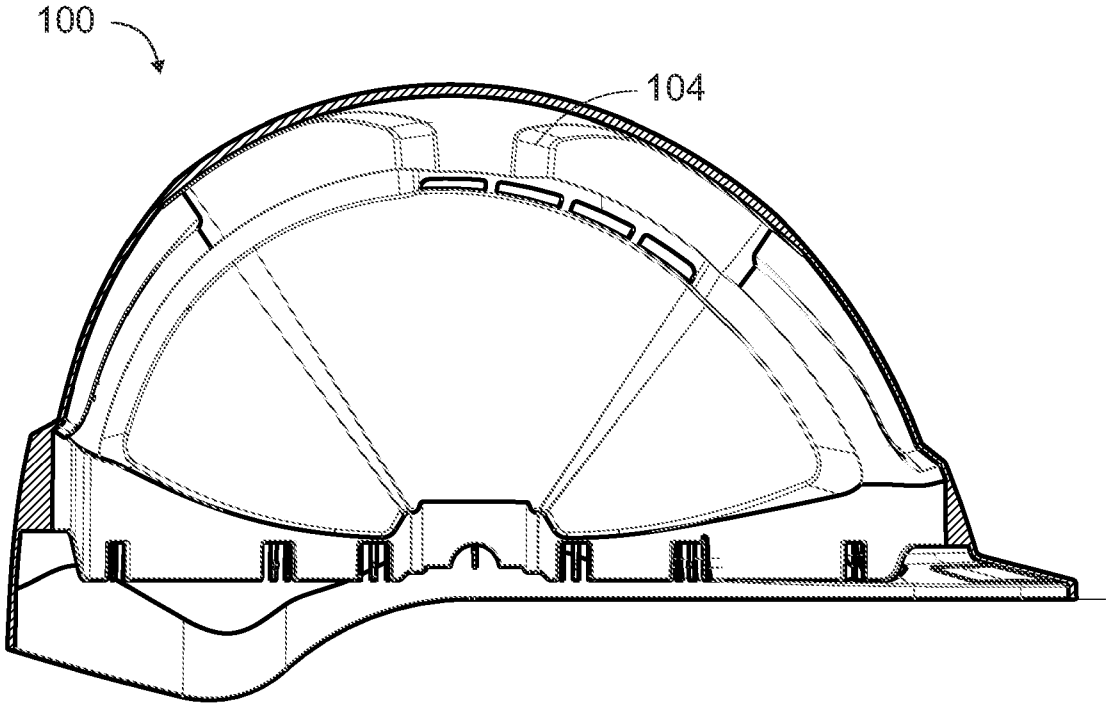

FIG. 4

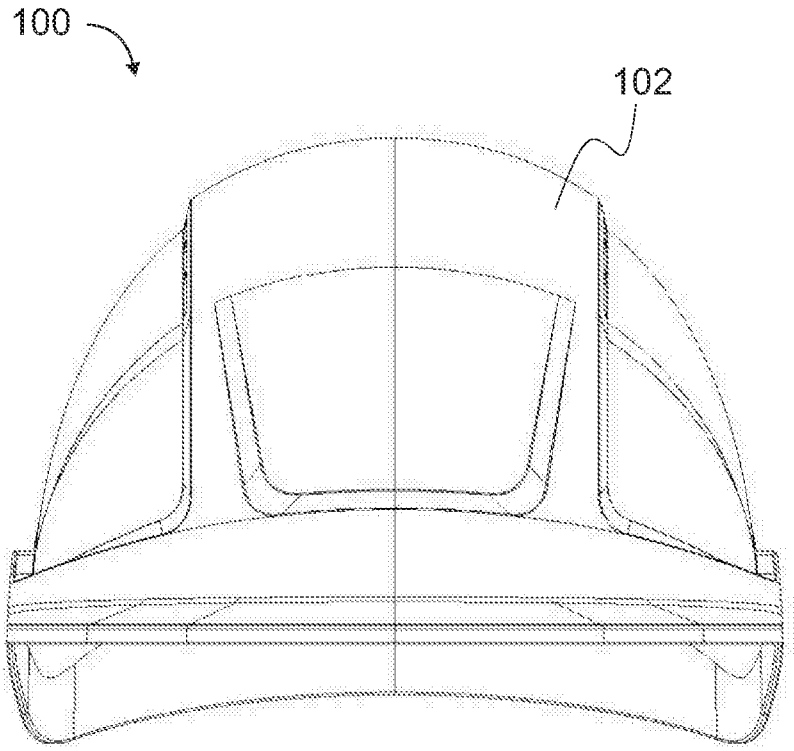

FIG. 5

SAFETY HELMET

FIELD OF THE INVENTION

Generally, the present invention relates to safety helmets. In particular, the present invention pertains to the impact features of safety helmets.

BACKGROUND

A safety helmet, such as a hard hat, is the type of helmet mainly used in workplace environments, such as industrial or construction sites, to protect the head from injury due to falling objects, impact with other objects, debris, rain, and electric shocks.

Helmets typically comprise means, such as suspension parts inside the helmet's body part, for spreading the helmet's weight and the force of any impact over the top of the head. A suspension part typically provides a space between the helmet's body part and the wearer's head, so that if an object strikes the shell, the impact is less likely to be transmitted directly to the skull. Despite the suspension parts, the safety features of helmets still need to be improved.

SUMMARY OF THE INVENTION

The objective is to at least ease the problems described hereinabove not satisfactorily solved by the known arrangements, and to provide a feasible safety helmet for improving impact protection and enhancing personal safety.

The aforesaid objective is achieved according to the present invention, as claimed in claim 1.

Accordingly, in one aspect of the present invention, a safety helmet comprises an energy distribution part arranged in a body part of the safety helmet for distributing the energy of an impact in the safety helmet.

In one embodiment the energy distribution part has a shape of a cross.

In one embodiment the energy distribution part is formed by a wall thickness change.

In one embodiment at least a part of the thickness of the energy distribution part is more than the thickness of the body part.

In one embodiment the energy distribution part is arranged on the inside of the safety helmet.

In one embodiment at least part of the energy distribution part is arranged to a crown area of the safety helmet.

In one embodiment the safety helmet comprises a suspension system.

In one embodiment the energy distribution part is arranged inside the suspension system.

In one embodiment the safety helmet is made of Acrylonitrile Butadiene Styrene (ABS) plastic and/or polycarbonates (PC) plastic.

In one embodiment the safety helmet is made of high-density polyethylene (HDPE) plastic.

The utility of the present invention follows from a plurality of factors depending on each particular embodiment.

Some embodiments of the helmet's structure optimize deflection and force transfer from the crown area, through the energy distribution part, to the sides of the helmet's body part in an efficient way. The energy may be distributed and dissipated equally, thus keeping force transfer to the head of the wearer low.

The cross design of the energy distribution part has advantages, such as it may allow an even and/or smooth transfer of energy to the sides of the body part. A wall thickness change in the energy distribution part may enable a simple and inexpensive way to manufacture the helmet.

The cross shape on the inside crown area may be able to optimize deflection (i.e. deformation of the crown) to the point it does not touch the head form, but still allows enough deformation, so that the force transfer to the head is not too high. The cross shape may optimize the balance between flexible (i.e. not too rigid) reduced force transfer to the head and too much deflection where the crown concaves in and touches the head form in EN397 testing.

The safety helmet of the present invention may help to extend the time taken to transfer the energy of the impact, thereby minimizing it, transitioning it smoothly to the sides and the suspension system.

The expression "a number of" refers herein to any positive integer starting from one (1), e.g. to one, two or three.

The expression "a plurality of" refers herein to any positive integer starting from two (2), e.g. to two, three or four.

Different embodiments of the present invention are disclosed in the dependent claims.

BRIEF DESCRIPTION OF THE RELATED DRAWINGS

Next the invention is described in more detail with reference to the appended drawings in which

Fig. 1 illustrates a perspective view of an embodiment of a safety helmet in accordance with the present invention.
Fig. 2 illustrates a bottom view of the safety helmet.
Fig. 3 illustrates a cross-section of the rear view of the safety helmet.
Fig. 4 illustrates a cross-section of the side view of the safety helmet
Fig. 5 illustrates a front view of the safety helmet.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Referring to figures 1-5, the safety helmet 100 comprises a body part 102 and an energy distribution part 104.

The energy distribution part 104 is arranged to the body part 102 of the safety helmet 100 for distributing the energy of an impact in the safety helmet 100. The energy distribution part 104 is arranged to the inside of the safety helmet to the crown area 106.

The energy distribution part 104 has the shape of a cross 108. The shape may be formed by a wall thickness change 110 relative to the body part 102. The wall thickness change 110 may be an embossed feature such as a protrusion form. The edges of the energy distribution part 104 may taper down in order to transit smoothly the energy of an impact.

At least a part of the wall thickness of the energy distribution part 104 is more than the wall thickness of the body part 102. The body part 102 may have a wall thickness of approximately 1.5-2mm in the crown area. The energy distribution part 104 may have a wall thickness of approximately 3-10mm.

The energy distribution part 104 is arranged inside the suspension system 112 of the safety helmet 100.

The crown area 106 may be 110mm or 120mm, for example.

The safety helmet 100 may be made of acrylonitrile butadiene styrene (ABS), polycarbonates (PC), polycarbonate glass fibre, polyamide (e.g. Nylon 6), high-density polyethylene (HDPE), low density polyethylene or polyoxymethylene (POM), for example.

Consequently, a skilled person may, on the basis of this disclosure and general knowledge, apply the provided teachings in order to implement the scope of the present invention as defined by the appended claims in each particular case of use with the necessary modifications, deletions and additions.

CLAIMS

1. A safety helmet comprising

- a body part,
- an energy distribution part arranged inside said body part for distributing the energy of an impact in the safety helmet, wherein the energy distribution part has a shape of a cross, and

wherein said energy distribution part is formed by a wall thickness change so that at least a part of the wall thickness of said energy distribution part is more than the wall thickness of said body part.

2. The safety helmet according to any preceding claim, wherein at least part of the energy distribution part is arranged to a crown area of the safety helmet.

3. The safety helmet according to any preceding claim, wherein the safety helmet is made of polycarbonates (PC), polycarbonate glass fibre, polyamide, high-density polyethylene (HDPE), low density polyethylene or polyoxymethylene (POM).