April 16, 1940. P. L. CROSBY 2,197,174

ARMORED HELMET

Filed June 6, 1938

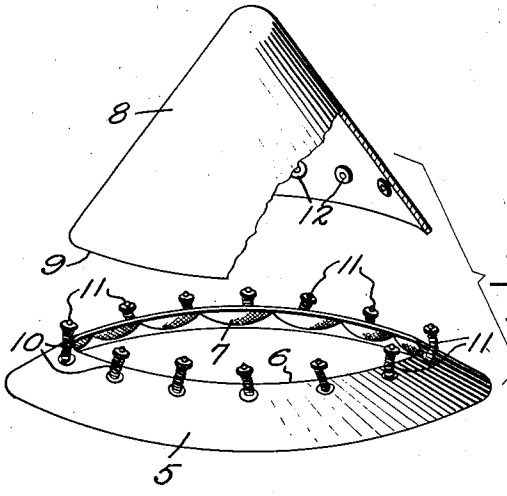


Fig. 1.

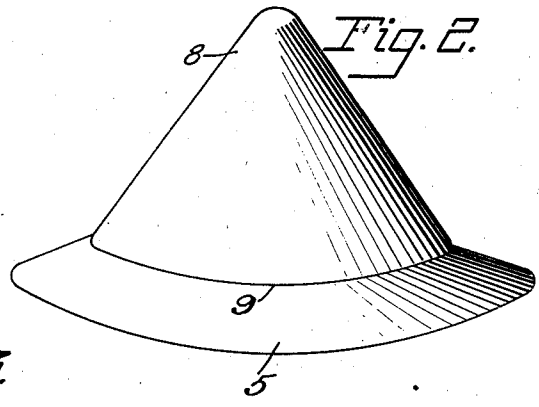


Fig. 2.

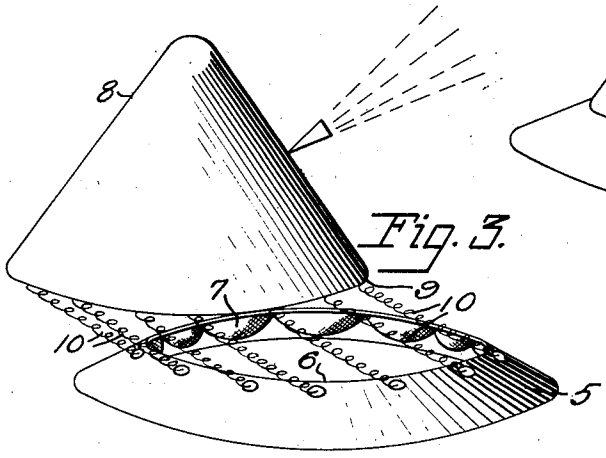


Fig. 3.

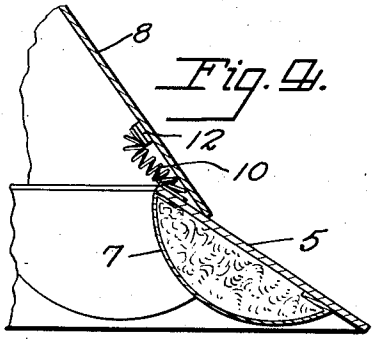


Fig. 4.

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ARMORED HELMET

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3 Claims. (Cl. 2—6)

The present invention relates to armored helments such as are used by soldiers as protection against head injuries by flying missiles. The helmet is particularly designed to afford protection against shrapnel, and it is so constructed and arranged that it will cause shrapnel fragments to glance off, rather than stop them in flight, thereby protecting the wearer not only against injury by direct contact of the fragments, but also avoiding the shock that is incident to the sudden stopping of a rapidly moving body.

Heretofore it has been proposed to protect persons' heads against flying shrapnel fragments and the like by the use of helmets that depend for their protective effect solely upon the strength and rigidity of their walls. Such helmets have included rigid crowns, quite rigidly secured in position upon the wearers' heads. The users of such helmets have been subjected to the shocks incident to the stopping of flying missiles impinging upon the surfaces of the helmets, and since shrapnel fragments and other missiles of war often travel at high speed and have great momentum, such users have often been severely injured by the impact of missiles upon the relatively rigid structures even though protected against actual contact by the missiles.

Helmets of these already known types have depended for their protective effect upon the strength of the walls alone, and consequently, when struck by a missile having a momentum greater than that which the wall of the halmet could resist, the wall would be penetrated by the missile, and the wearer subjected to the direct impact of such missile.

The helmet of the present invention is designed to provide a crown that is unstable with respect to the head of the wearer, such crown being readily moved by the impact of an impinging missile, whereby the surface that is struck by a missile will be moved to assume such an angular relation to the direction of motion of the missile that the latter will glance from the surface rather than be stopped by the wall of the helmet, or penetrate such wall.

The chief object of the present invention is to provide an armored helmet having an unstable crown arranged in a novel manner to permit it to move freely under the impact of a flying missile, to cause the surface of the crown to assume such an angle as to permit the missile to glance from the surface and be deflected from its direction of motion.

Another object is to provide a novel form of helmet that will adequately protect the wearer from injury by flying missiles, yet which will be light in weight and comparatively inexpensive to manufacture.

In the accompanying drawing:

Figure 1 is a perspective view of the helmet with the parts disassembled.

Figure 2 is a perspective view of the assembled helmet.

Figure 3 is a perspective view indicating the manner in which the helmet acts under the impact of a flying missile to cause the latter to be deflected and to glance from the surface of the helmet.

Figure 4 is a broken detail view.

Describing the drawing more particularly, the brim of the helmet is designated **5**. The brim may be generally oval in shape and has a central opening **6** from which it extends outwardly and downwardly to afford protection to the face of the wearer from missiles approaching downwardly from above, as shrapnel fragments.

The interior of the brim is provided with means for supporting the helmet upon the head of the user, such means here being shown as a padded head-band **7**. The head-engaging device is so arranged that the brim is at all points spaced from the head, and the padding is arranged to protect the head as much as possible from the shock of missiles that impinge upon the brim **5**.

The crown **8** of the helmet covers the opening **6** of the brim, said crown having a lower edge **9** that rests freely upon the upper surface of the brim **5** surrounding the opening **6**, when the helmet is in assembled condition as shown in Figure 2 of the drawing. This engagement of the edge of the crown upon the upper surface of the brim constitutes the entire support for the crown portion of the helmet.

Advantageously the crown **8** is conical in shape since this shape not only affords a wall structure that is extremely strong and resistant to deformation and penetration, but is also characterized by a total absence of flat or gradually curved surface area upon which a missile might impinge at a right angle, and its surface is not only curved at all points, but also presents a surface that is at an angle to both the vertical and the horizontal due to its convergence, while its surface area is relatively small.

From the above, it will be seen that this helmet comprises a brim that is to be supported upon the head of the wearer, and a conical crown freely supported upon the upper surface of the brim and covering the head. When a flying object strikes the crown, as illustrated in Figure 3, the crown

will readily move and yield to the impact, turning in such a manner as to present a surface at an obtuse angle to the direction of motion of the object, and the latter will be deflected, glancing from the surface. The missile, being deflected rather than stopped, its full energy will not be expended against the wall of the helmet.

In order to prevent the crown portion 8 from being knocked completely off of the brim and away from the wearer, and to hold it in its proper position upon the brim during normal wear, resilient means are provided for yieldingly holding the crown upon the brim. Such means, in order to retain the advantages of the freely movable crown, must be of such nature as to yield readily to a shock or blow upon the crown, and are here shown as a plurality of coil springs 10, spaced about the inside of the crown and being attached at one end to the crown and at the other end to the brim inside of the crown. The springs 10 are of sufficient strength to hold the crown in proper position upon the brim during normal wear, but are of sufficient length and resilience to permit the crown to move freely in response to a blow against its surface.

A convenient method of assembling the springs 10 with the other portions of the helmet is shown in Figure 1, wherein the springs are secured at their lower ends to the brim 5 at intervals about the edge of the crown, and the upper ends of the said springs are provided with stud elements 11 of snap fasteners, the sockets 12 of which are secured to the inner surface of the crown 8.

To further enhance the action of the helmet in presenting a surface that will move and cause a missile to glance off, the outer surface of the helmet is preferably made as smooth as possible. The outer surface of both the brim and the crown may, for this reason, be highly polished and they may be rendered slippery by coating them with oil or other slippery substance prior to going into action.

Obviously, the helmet may be made of any tough and strong, and preferably light, alloy or metal, and advantageously the material chosen will be such that the outer surface of the helmet will be capable of being given a very smooth and polished finish.

From the foregoing it is thought that the construction, operation and many advantages of the invention will be apparent without further description to those skilled in the art, and it will be appreciated that changes in the proportions and minor details may be resorted to without departing from the spirit of the invention.

What I claim is:

1. An armored helmet comprising a brim having an opening therein, means for supporting the brim on the head of a wearer with the opening above said head, a separate crown normally in direct engagement with and supported by the brim and freely movable thereon, said crown covering the opening, and resilient means connecting the brim and crown and normally holding the brim in direct engagement of the crown, said means being extensible to permit the crown to move upon the brim when subjected to impact.

2. An armored helmet in accordance with claim 1, wherein the opening is centrally located in the brim and the brim is dished upwardly to the opening, and the crown is pot-shaped and its lower edge engages the upper surface of the brim about and closely adjacent the edges of the opening.

3. An armored helmet in accordance with claim 1, wherein the outer surface of the crown is smooth and polished.

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